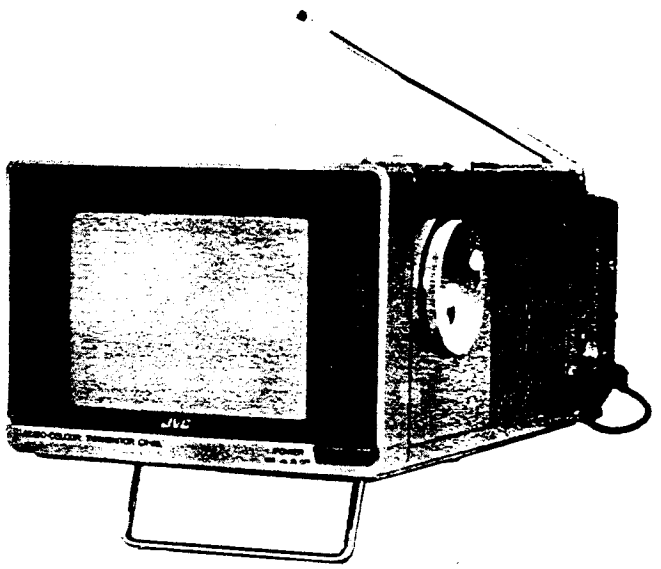
JVC

SERVICE MANUAL

6" PORTABLE COLOR TV

MODEL CX-60ME + CX-610GB



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OPTIONAL ACCESSORIES

CB-60E	Rechargeable Battery
AP-23	Auto Plug

SPECIFICATIONS

Dimension & Weight : Described on page 12.

TV System & Colour System
VHF/UHF . . . . . CCIR(B,D,G,K,K1,I), PAL/SECAM

TV Receiving Channel & Frequency
VL Band . . . . . 47 MHz ~ 68 MHz
VH Band . . . . . 174 MHz ~ 230 MHz
UHF Band . . . . . 470 MHz ~ 862 MHz

Intermediate Frequency
Video IF Carrier . . . . . 38.9 MHz
Sound IF Carrier . . . . 33.4 MHz (5.5 MHz), 32.9 MHz
: .(6 MHz) or 32.4 (6.5 MHz) selectable
Colour Sub Carrier . . . . . PAL : 4.43 MHz
: . . SECAM : 4.25 MHz, 4.40625 MHz
ANT. . . . . Built-in rod antenna for VHF and UHF
ANT. Input Impedance . . . . 75Ω, AERIAL (VHF/UHF)
Power Input . . • 100 V ~ 260 V AC, 50 Hz/60 Hz
• DC12V Car battery
with auto plug (Model AP-23) option.
• DC12V rechargeable battery
(Model CB-60E) option.

Power Consumption . . . . . 0.16A (when 240V AC)
: . . 1.30A (max.), 15W (avg.) : (when 12V DC)
Picture Tube . . . . . 6", 55 degrees deflection, In-line gun dot screen
Viewable Picture Size . . . . . (W) 10.4 cm x (H) 7.9 cm
High Voltage . . . . . 14 kV ± 1 kV (at Zero beam current)
Speaker . . . . . 8 cm round type, 16 Ω
Audio Power Output 0.6W
Video External Input . . . . . 1 Vp-p, 75 Ω
Audio External Input . . . . . 390 mVrms (-6 dBs), high impedance
Video TV Output . . . . . 1 Vp-p, 75 Ω
Audio TV Output . . . . . 150 m Vrms (-14 dBs) low impedance (400Hz, 50% Mod.)

Tube 1
IC 7
Transistor 32

(Design and specifications subject to change without notice)

No. 5513
Mar. 1984

7. REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTE
Components identified by the ⚠ symbol in the PARTS LIST and the shaded areas on the Schematic have special characteristics important to safety. Before replacing any of these components, read carefully the SAFETY PRECAUTION on Page 2 of this Service Manual.
DO NOT degrade the safety of the set through improper servicing.

1. ABBREVIATED WORDS OF RESISTORS AND CAPACITORS

RESISTORS

C R	:	Carbon Resistor
Comp. R	:	Composition Resistor
OM R	:	Oxide Metal Film Resistor
V R	:	Variable Resistor
MF R	:	Metal Film Resistor
F R	:	Fusible Resistor
UNF R	:	Unflammable resistor

CAPACITORS

C Cap.	:	Ceramic Capacitor
M Cap.	:	Mylar Capacitor
E Cap.	:	Electrolytic Capacitor
BP E Cap.	:	Bi-Polar (or Non-Polar) Electrolytic Capacitor
MM Cap.	:	Metalized Mylar Capacitor
PP Cap.	:	Polypropylene Capacitor
MPP Cap.	:	Metalized PP Capacitor
PS Cap.	:	Polystyrol Capacitor
Tan. Cap.	:	Tantalum Capacitor

2. FOLLOWING RESISTORS AND CAPACITORS OF STANDARD ELECTRICAL COMPONENTS ARE OMITTED FROM THIS PARTS LIST. EACH PART NUMBER OF THESE STANDARD REPLACEMENT COMPONENTS IS DEFINED AS FOLLOWS.

Carbon Resistor (C R): Lead form ( )

Rating	Part No.
¼W	QRD141J-□□□ (CR, ¼W, Tolerance, Lead form, Constant term)
½W	QRD121J-□□□
⅛W	QRD161J-□□□

Ceramic Capacitor (C Cap.): Lead form ( )

Withstand Voltage	Parts No.
50V	QCS11HJ-□□□ (C Cap., 50V, Tolerance, Lead form, Constant term)
500V	QCS12HJ-□□□

Composition Resistor (Comp. R): Lead form ( )

Rating	Part No.
½W	QRC121K-□□□ (Comp. R, ½W, Tolerance, Lead form, Constant term)

Electrolytic Capacitor (E Cap.): Lead form ( )

Withstand Voltage	Parts No.
6.3V	QET40JR-□□□ (E Cap., 6.3V, Tolerance, Lead form, Constant term)
10V	QET41AR-□□□
16V	QET41CR-□□□
25V	QET41ER-□□□
50V	QET41HR-□□□

Mylar Capacitor (M Cap.): Lead form ( )

Withstand Voltage	Part No.
50V	QFM11HK-□□□ (M Cap., 50V, Tolerance, Lead form, Constant term)
100V	QFM42AK-□□□
200V	QFM42DM-□□□

3. DECODING OF TOLERANCE AND CONSTANT TERM

TOLERANCE

J: ±5% K: ±10% M: ±20% N: ±30% H: $^{+50}_{-10}$% Z: $^{+80}_{-20}$% P: $^{+100}_{-0}$% R: $^{+30}_{-10}$%

CONSTANT TERM

• **Carbon Resistor (¼W, ±5% Tolerance)**

QRD141J-□□□ (CONSTANT TERM.)

- □ □ □ — 2.7Ω → QRD141J-2R7
- 1 R 0 → 1.0Ω — 47kΩ → 47 x 10³ → QRD141J-473
- 9 R 7 → 9.7Ω
- 1 0 □ → 10□ means 10 x 10□ (Ω)
- 8 2 □ → 82□ means 82 x 10□ (Ω)

• **Ceramic Capacitor (50 Volts, ±5% Tolerance)**

QCS11HJ-□□□ (CONSTANT TERM.)

- □ □ □ — 5pF → QCS11HJ-5R0
- 1 R 0 → 1.0pF — 680pF → 68 x 10¹ → QCS11HJ-681
- 8 R 0 → 8.0pF — 3300pF → 33 x 10² → QCS11HJ-332
- 1 0 □ → 10□ means 10 x 10□ (pF)
- 8 8 □ → 88□ means 88 x 10□ (pF)

TRC-1280A (MAIN PB ASS'Y)

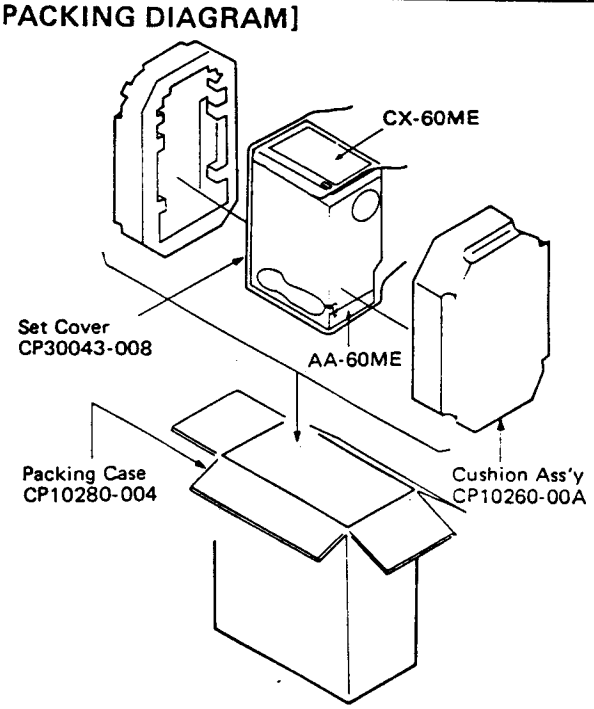
SYMBOL NO.	△	PART NO.	PART NAME	REMARK
VARIABLE RESISTOR				
R1001		CEX40327-001	VR (Tuning)	200kΩ B
1004		QVZ3507-224	" (VHL Sub Tuning)	220kΩ "
1007		" -224	" (VHH ")	" "
1008		" -224	" (UH ")	" "
1009		CEX40358-473	" (VL ")	47kΩ "
1010		" -473	" (UL ")	" "
1109		" -103	" (Noise)	10kΩ "
1211		A76193-223	" (Sub Contrast)	22kΩ "
1212		CEX40118-B14M	" (Picture)	10kΩ "
1216		A76193-222	" (Sub Bright)	2.2kΩ "
1217		CEX40119-B52M	" (Bright)	500Ω "
1305		A76193-222	" (Sub Colour)	2.2kΩ "
1306		CEX40119-B14M	" (Colour)	10kΩ "
1313		A76193-473	" (PAL Sub Colour)	47kΩ "
1343		QVZ3507-102	" (DL Amp.)	1kΩ "
1407		CEX40118-B25M	" (V. Hold)	200kΩ "
1409		CEX40358-103	" (V. Height)	10kΩ "
1422		A76195-471	" (V. Center)	470Ω "
1511		CEX40358-103	" (H. Hold)	10kΩ "
1615		CEX40374-D24	" (Volume)	20kΩ D
1702		CEX40357-022	" (G. Drive)	200Ω B
1703		" -022	" (R. Drive)	" "
1710		" -053	" (B. Cutoff)	5kΩ "
1711		" -053	" (G. Cutoff)	" "
1712		" -053	" (R. Cutoff)	" "
1907		CEX40358-102	" (11V Adjust)	1kΩ "
RESISTOR				
R1713		QRG019J-123S	OM R	12kΩ 1W J
1714		" -123S	"	" " "
1715		" -123S	"	" " "
1901		QRF154J-8R2	UNF R	8.2Ω 15W "
1906	△	QRV141F-2701Y	MF R	2.7kΩ ¼W ±1%
1908	△	" -2701Y	"	" " "
CAPACITOR				
C1001		QEB51HM-104M	E Cap.	0.1μF 50V M
1005		QETB1CM-106	"	10μF 16V "
1007		QEM51CK-336M	"	33μF " K
1008		QETB1HM-105	"	1μF 50V M
1009		QETB1CM-477	"	470μF 16V "
1112		QCT25CH-101Z	C Cap.	100pF 50V J
1113		" -220AZ	"	22pF " "
1115		QEE51VK-474B	Tan. Cap.	0.47μF 35V K
1119		QETB0JM-336	E Cap.	33μF 6.3V M
1120		QCT25CH-101	C Cap.	100pF 50V J
1121		QETB1AM-477	E Cap.	470μF 10V M
1204		QEU51CM-337M	"	330μF 16V "
1205		QEK51HM-105GM	"	1μF 50V "
1206		QEM51CK-336M	"	33μF 16V K
1209		QEU51CM-337M	"	330μF " M
1303		QEK51HM-105GM	"	1μF 50V "
1320		QAT3001-010	Trimmer Cap.	
1331		QCT25UJ-330Z	C Cap.	33pF 50V J
1332		" -560Z	"	56pF " "
1333		" -330Z	"	33pF " "
1334		" -680Z	"	68pF " "
1352		QEE51VK-105B	Tan. Cap.	1μF 35V K
1354		" -105B	"	" " "
1357		" -105B	"	" " "
1402		QFZ0083-683MZ	M Cap.	0.068μF 50V "
1403		QEN51HM-474	BP E Cap.	0.47μF " M
1404		QFV71HJ-224MZ	T F Cap.	0.22μF " J
1405		QEE61CK-225BZ	Tan. Cap.	2.2μF 16V K
1406		QETB1CM-107	E Cap.	100μF " M
1408		QEE61CK-225BZ	Tan. Cap.	2.2μF " K

SYMBOL NO.	△	PART NO.	PART NAME	REMARK
C1409		QETB1EM-108	E Cap.	1000μF 25V M
1410		QETB1CM-477	"	470μF 16V "
1411		QEB51HM-104M	"	0.1μF 50V "
1413		QETB1EM-107	"	100μF 25V "
1501		QEK51HM-105GM	"	1μF 50V "
1516		QEN51HM-474	BP E Cap.	0.47μF " "
1519	△	QFP32DJ-273M	PP Cap.	0.027μF 200V J
1520	△	" -273M	"	" " "
1521	△	" -273M	"	" " "
1522		QET52CR-336	E Cap.	33μF 160V R
1523		QETB1CM-108	"	1000μF 16V M
1524		QEM51VM-107M	"	100μF 35V "
1525		" -336M	"	33μF " "
1532		QFP31HJ-152S	PP Cap.	1500pF 50V J
1607		QCT25CH-120AZ	C Cap.	12pF " "
1608		QETB1CM-106	E Cap.	10μF 16V M
1611		QEB51HM-104M	"	0.1μF 50V "
1614		QFV81HJ-154M	TF Cap.	0.15μF " J
1704		QCZ9017-102M	C Cap.	1000pF 3kV P
1903		QEU51CM-337M	E Cap.	330μF 16V M
COIL				
L1001		A49468-101U	Peaking Coil	100μH
1101		CE40453-1R8	"	1.8μH
1102,3		CE40401-8R2	"	8.2μH
1104		A76186-8.2Z	"	"
1105		A76186-6.8	"	6.8μH
1106		A76186-2.7	"	2.7μH
1107		A04872-80	"	80μH
1201		CE40401-470	"	47μH
1301		A76186-8.2Z	"	8.2μH
1302		A49468-562	"	5600μH
1303		CE40084-181	"	180μH
1401		A76186-1000	"	1000μH
1502		CE40581-450	Coil	
1503		" -660	"	
1504		" -150	"	
1505		CE40544-001	H. Line Coil	
1506		A49468-101U	Peaking Coil	100μH
1507		A04725-2.2	"	2.2μH
1508		A76186-150	"	150μH
1601		A04872-80	"	8μH
1602		A76186-15Z	"	15μH
TRANSFORMER				
T1101		CE40455-301	1st PIF Transf.	
1103		CE40123-700	AFC Transf.	
1104		CE40119-301	C W Transf.	
1301P		CE40443-001	BP Transf.	
1301S		CE40397-001	Bell Transf.	
1302P		CE40395-001	CW Transf.	
1302S		" -001	"	
1303		CE40636-001	DL P. Transf.	
1304		CE40399-001	Discri. Transf.	
1305		" -001	"	
1501		CE40543-001	H. Drive Transf.	
1502	△	CJ39591-001	H.V. Module	
1601		CE40633-001	SIF Transf.	
1602		CE40634-002	"	
DIODE				
D1001		1SS133	Si. Diode	
1008		HZT33	Zener Diode	
1201		1SS133	Si. Diode	
~ 3				
1204		MA4110(M)	Zener Diode	
1301, 05		1SS133	Si. Diode	
1302		MA4068(L)	Zener Diode	
1303		RD2.7E(B)	"	

SYMBOL NO.	△	PART NO.	PART NAME	REMARK
D1304		RD9.1E(B3)	Zener Diode	
1401,2		1SS133	Si. Diode	
1403		1SR35-100A	"	
1501		1SS133	"	
1502		MA4075(M)	Zener Diode	
1503		1SS133	Si. Diode	
1504		V19E	"	
1505 ~ 7		1SR124-400A	"	
1508	△	HZ7B2L	Zener Diode	
1509		1SS133	Si. Diode	
1601 ~ 5		"	"	
1606		MA4110(M)	Zener Diode	
1901		1SR35-100A	Si. Diode	
1902		1SS133	"	
1903	△	MA4056(H)	Zener Diode	
1904,5		1SS133	Si. Diode	
1906		LN342RP	LED	POWER IND.
TRANSISTOR				
Q1001		2SD637(Q,R)	Transistor	
1002		2SB641(Q,R)	"	
1003		2SD637(Q,R)	"	
1101		2SC1906	Si. Transistor	
1102		2SD638(R,S)	Transistor	
1103,4		2SD637(R,S)	"	
1201		2SB641(Q,R)	"	
1202		2SD637(Q,R)	"	
1301,2		"	"	
1303		2SB641(Q,R)	"	
1401,2		2SC2655(Y)	"	
1403		2SD637(Q,R)	"	
1404		2SB641(Q,R)	"	
1501		2SD639(Q,R)	"	
1502	△	2SD1271(P,Q)	Si. Transistor	
1601		2SD637(Q,R)	Transistor	
1602		2SD1265(Q,P)	"	
1603		2SB641(Q,R)	"	
1701 ~ 3		2SC3187	Si. Transistor	
1901		2SB953A(P,Q)	"	
1902		2SB641(Q,R)	Transistor	
1903		2SD637(Q,R)	"	

SYMBOL NO.	△	PART NO.	PART NAME	REMARK
IC				
IC1001		AN5700	IC	
1101		TA7607AP	"	
1201		TA7698AP	"	
1301		M51397AP	"	
1601		AN5732	"	
1602		AN7130	"	
OTHERS				
R1201	△	CE40731-4R7A	Posistor	4.7Ω
1527	△	" -3R3	"	3.3Ω
1529	△	" -100	"	10Ω
1530, 1	△	" -3R3	"	3.3Ω
1618	△	" -4R7A	"	4.7Ω
FR1420	△	QRZ0054-100M	FR	10Ω 1/4W J
1518	△	" -2R2M	"	2.2Ω " "
F1901	△	QMF51E2-2R05	Fuse	2A
J1201, 2		CEX40221-001	Jack	VIDEO IN/OUT
1601, 2		" -002	"	AUDIO IN/OUT
1603		CEX40288-001	Earphone Jack	
1901		CEX40329-001	EXT DC Jack	
S1001		CEX40055-005	Push SW.	VHF/UHF
1002		CEX40078-002	Lever SW.	SERVICE
1101		QSS1201-001	Slide SW.	AFC SW.
1201		CEX40055-002	Push SW.	TV/EXT
1202		CEX40078-002	Lever SW.	SERVICE
1301		CEX40059-005	Slide SW.	TV SOUND
1302		" -006	"	COLOUR SYSTEM
1501		CEX40078-002	Lever SW.	H. CENTER
1901		CEX40328-001	Power SW.	POWER SW.
TU1001		EK7015ES	E Tuner	
SF1101		CE40050-402	Saw Filter	
CT1101		A76137	C Trap.	
1102		A76138	"	
1103		A76139	"	
CF1601		A75417-C	Ceramic Filter	
1602		A75088-C	"	
1603		A75111-C	"	
DL1201		CE40714-001	Delay Line	
1301		A76350	1H Delay Line	
X1101		A75087	Piezonator	
1301		A76090	Crystal	
K1501		CE40155-001	Core	
	△	CE40541-00A	CRT Socket	

[PACKING DIAGRAM]



ATTACHED MATTERS

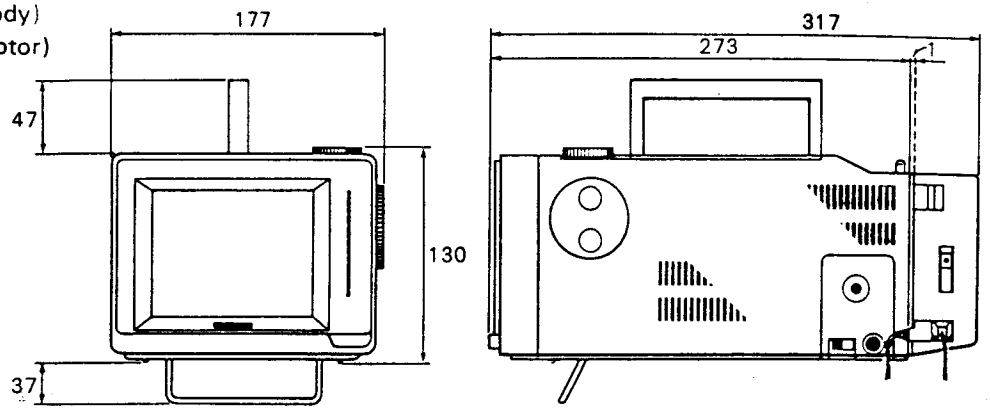
Inst. Book CX-60ME-IB-A
Safety Tips BT-20067
Notice Card A76339-2

OPTIONAL ACCESSORIES

Rechargeable Battery CB-60E
Auto Plug AP-23

■ DIMENSION AND WEIGHT

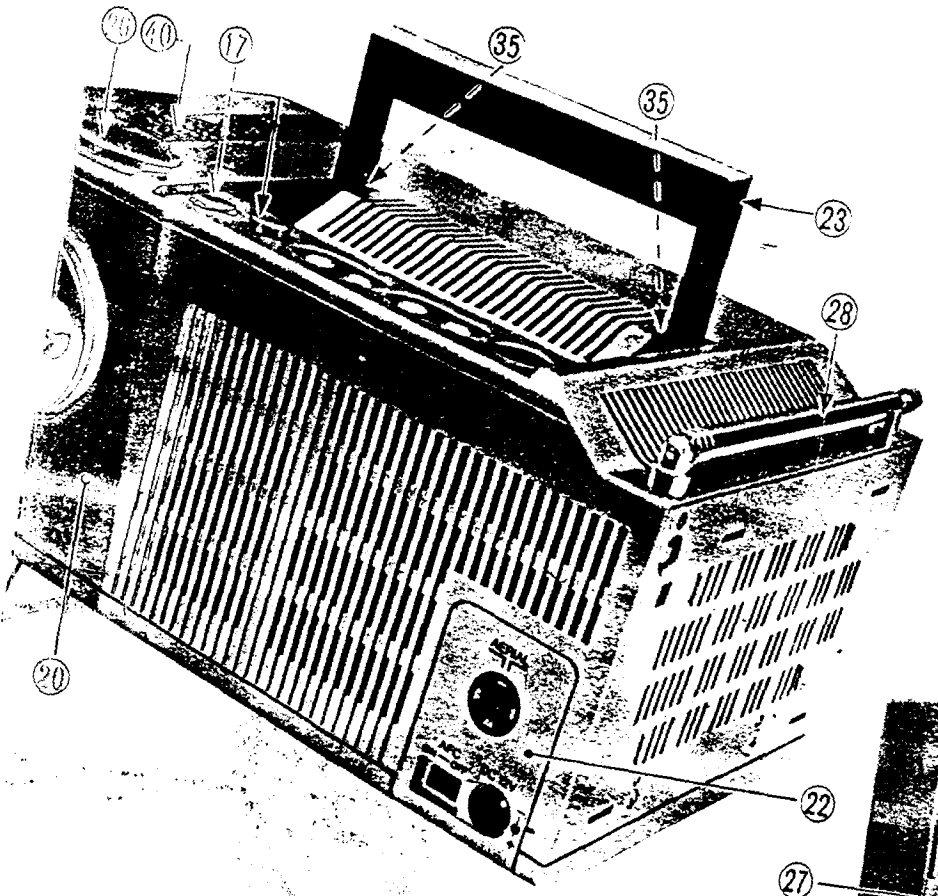
Weight : 2.5 kg (Main body)
: 800 g (AC Adaptor)



(Unit: mm)

CHASSIS AND CABINET PARTS LIST

VIEW NO.	SYMBOL NO.	△	PART NO.	PART NAME	REMARK
1	V01	△	150CHB22-AE	Picture Tube	
2	DY01	△	CJ26200-00A	Def. Yoke Ass'y	
3			CE40666-00A	S. Wedge	(x2)
4			CM42291-A01	Earth Spring	
5			EAS-8P16SH	Speaker	
6			CM10244-A0C	Front Panel Ass'y	
7			CM41318-001	Brand Mark	within Front Panel Ass'y
8			CM42054-A03	Channel Window	
9			CM42056-001	Knob Cap.	Power SW.
10			CM42055-001	Power Knob	
11			CM30861-013	Spring	
12			CM42068-A01	Stand	
13			CM10246-A03	Bottom Cover	
14			CM30996-A0A	Tuning Ass'y	
15			CM42214-001	Belt	within Tuning Ass'y
16			CM42216-00A	Needle Ass'y	
17			CM42066-005	Push Knob	(x2) TV/EXT.,VHF/UHF
18			CM42067-A01	Knob Cap.	(x2) TV/EXT., VHF/UHF KNOB
19			CM30861-A12	Spring	(x2) " " "
20			CM10241-A02	Top Cabinet	
21			CM20425-001	Protector Glass	
22			CM20502-A0A	Ant. Terminal Ass'y	
23			CM30998-005	Handle	
24			A48960-3	Pin	(x2) Handle
25			CM31025-00E	Tuning Knob	
26			CM42064-005	Volume Knob	
27			CM40835-001	Pin Holder	(x2)
28			CM41686-00B	Rod Ant. Ass'y	
29			CM20505-001	Rating Label	
30			CM42475-001	Foot	(x2)
31	TU1001		EK7015ES	VHF/UHF E Tuner	
32	S1901		CEX40328-001	Power Switch	
33	T1502	△	CJ39591-001	H V Module	
34			CH40321-008	TFC Connector	(x2)
35			CM40574-008	Washer	(x2) Handle
36			CM42419-001	Stand Spring	
37	D906		LN842RP	LED	Power Indicator
38			CM42388-001	Knob Washer	Tuning Knob
39			CM42535-A02	Operation Sheet	
40			A76235	Channel Chart	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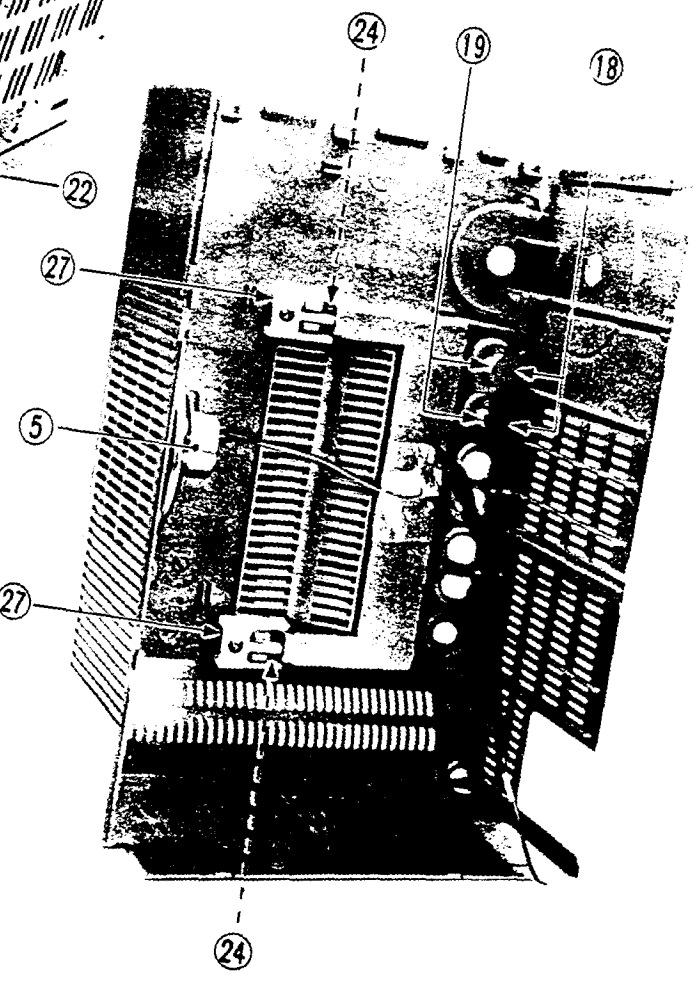
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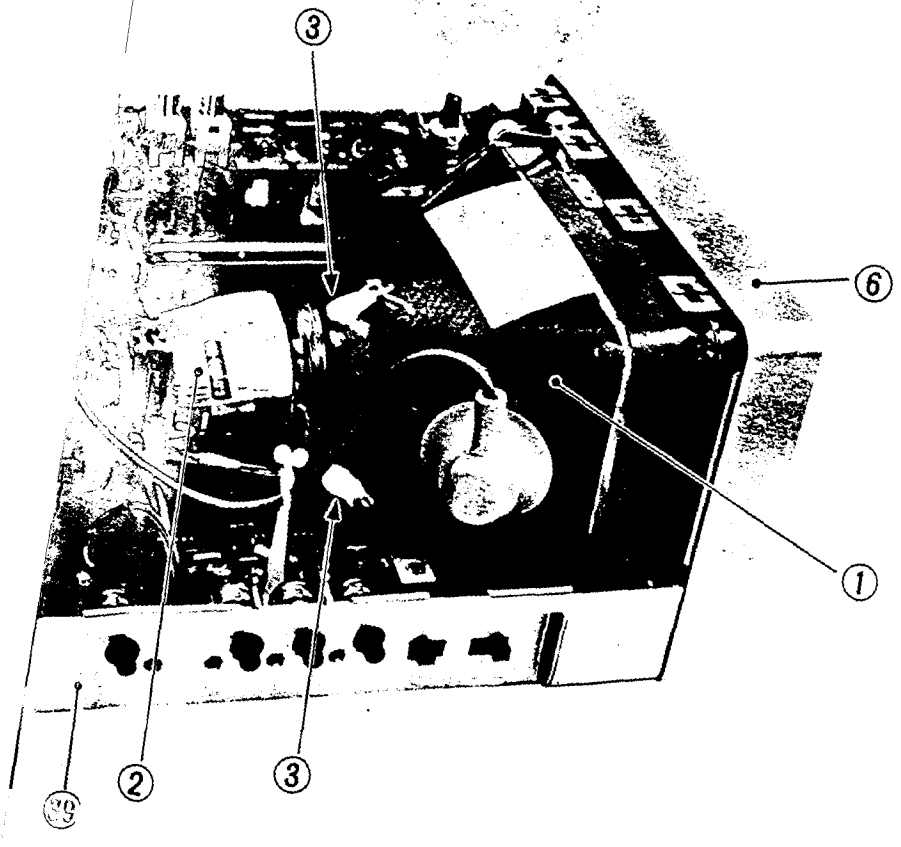
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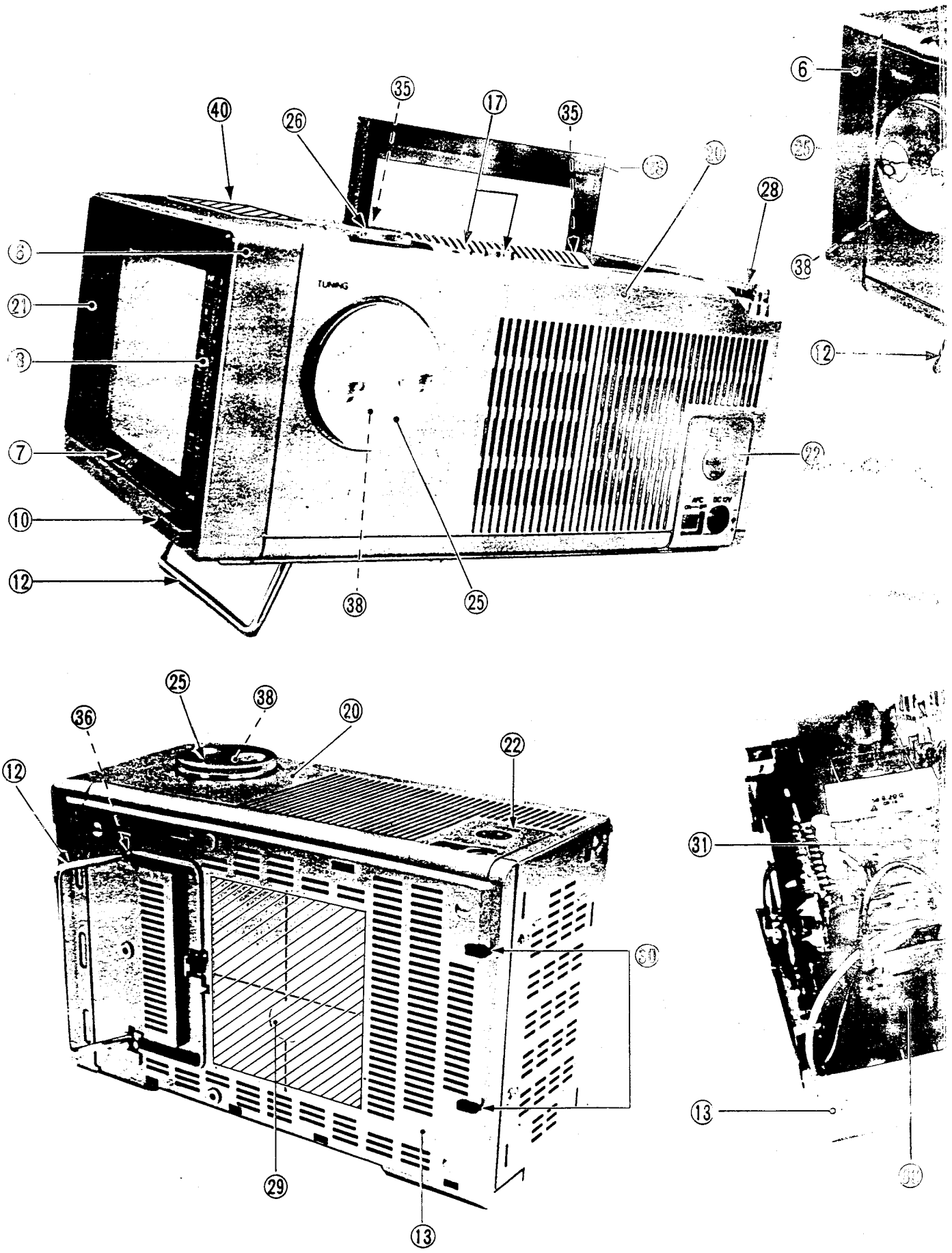
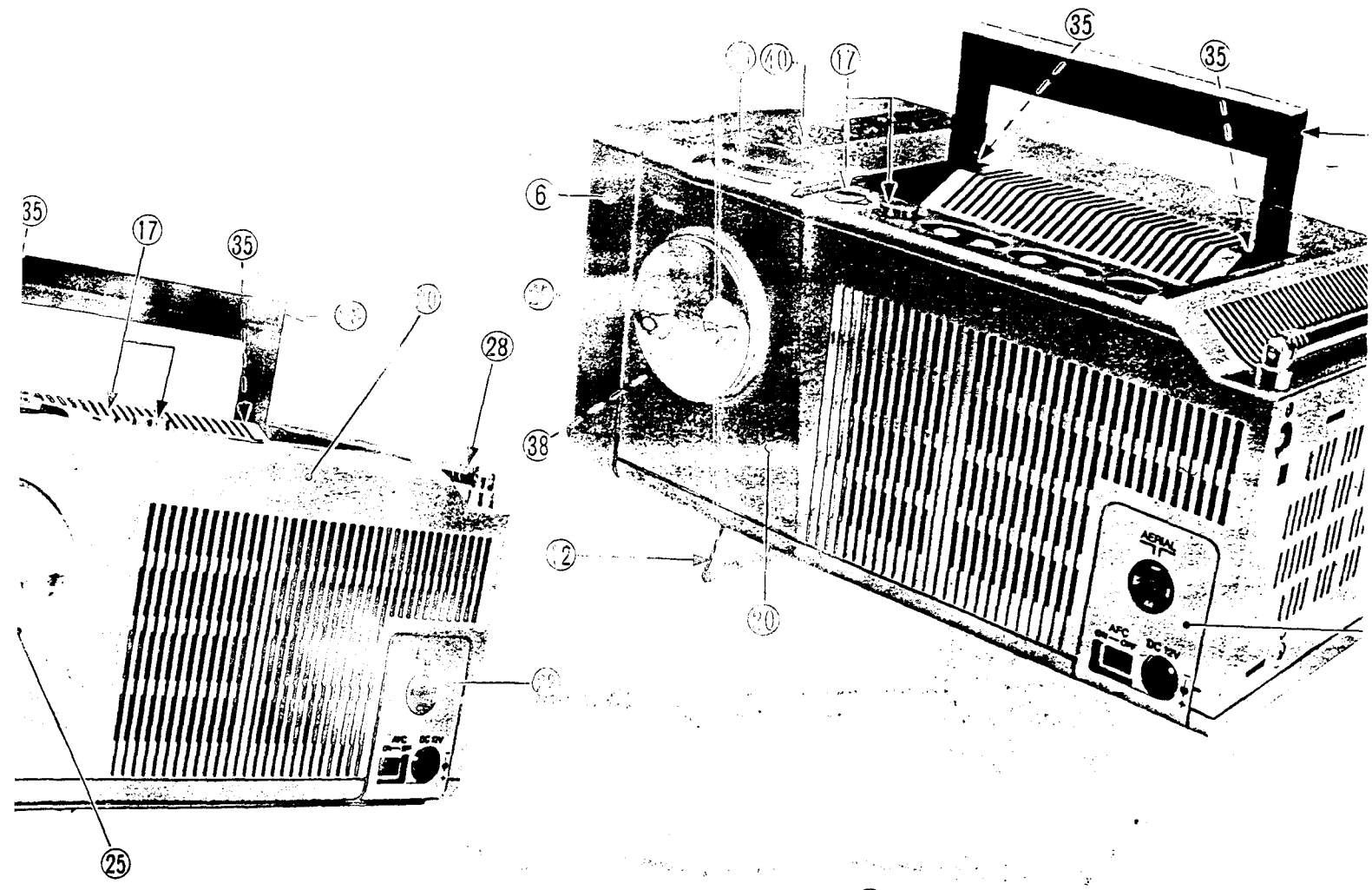
[EXPLODED VIEW]

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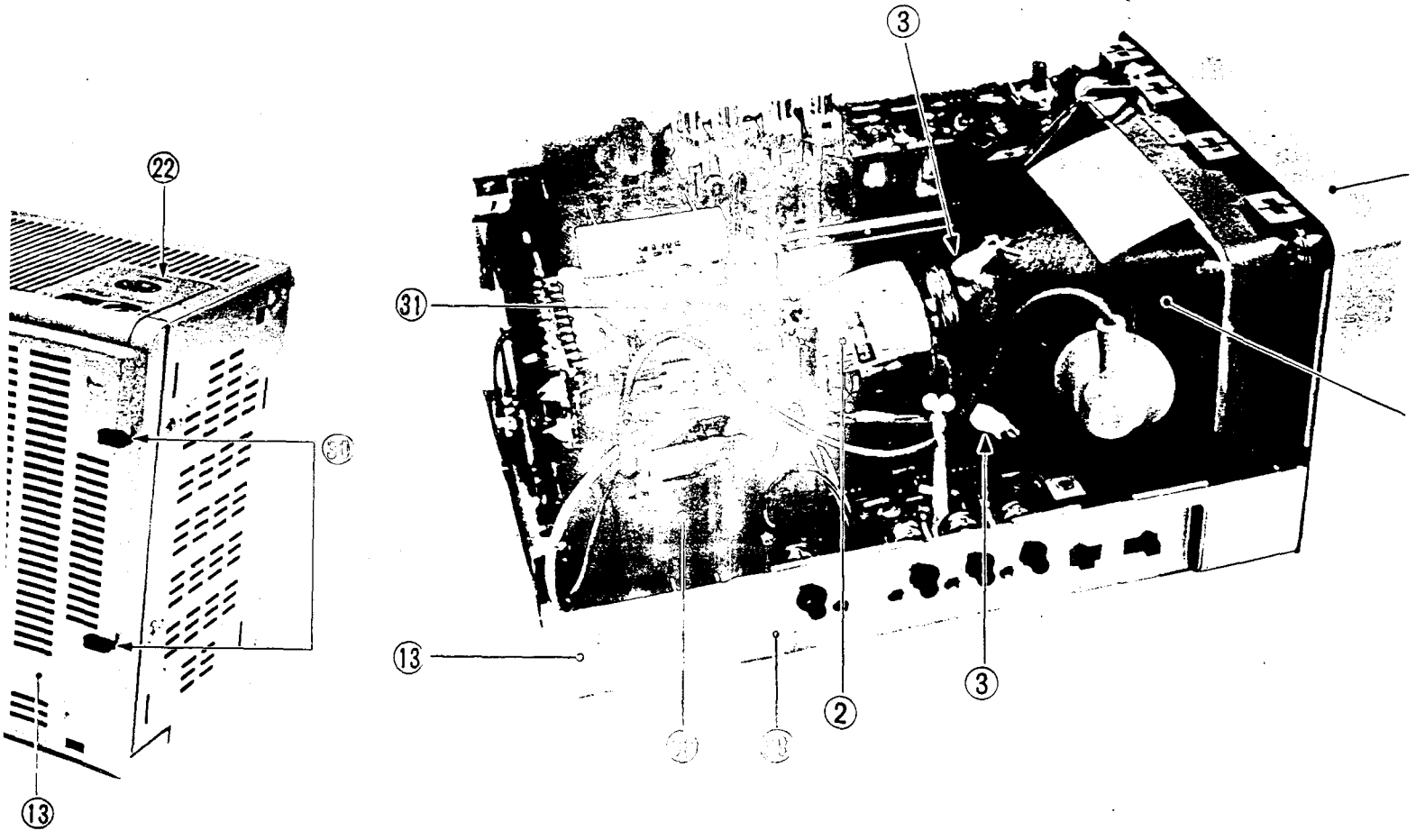
AERIAL
AFC
DC 12V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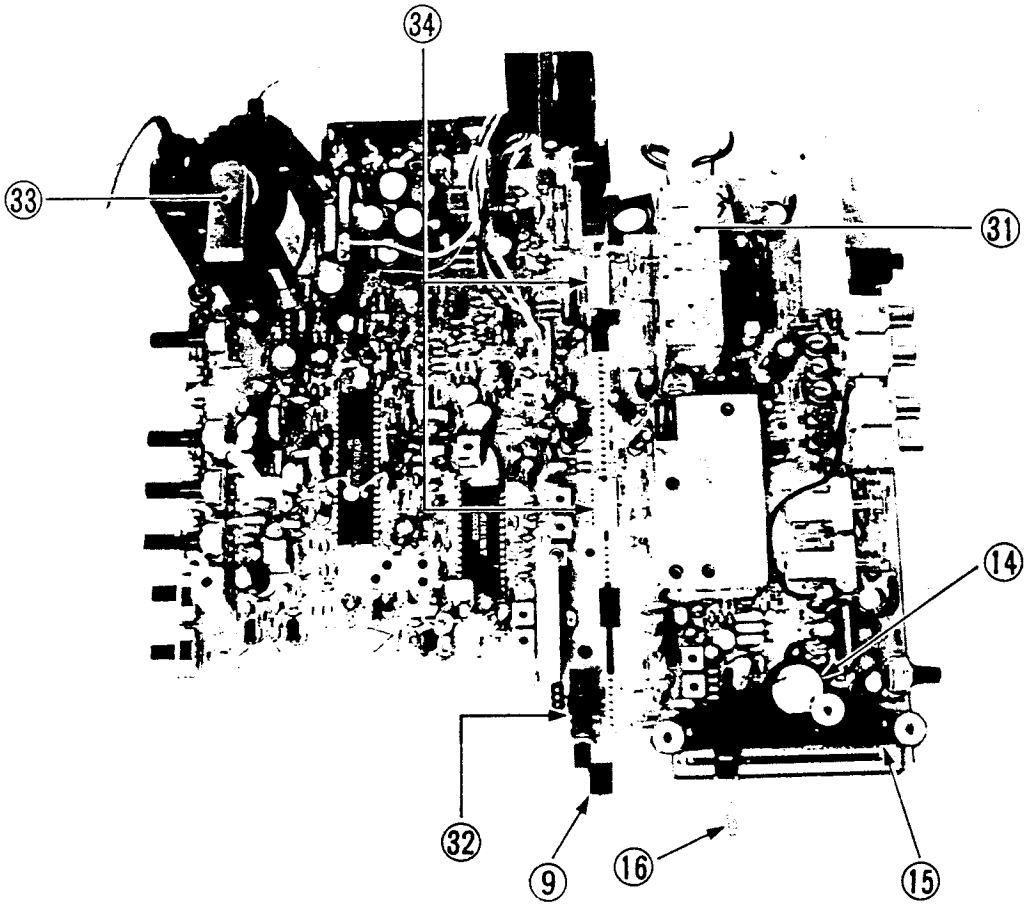
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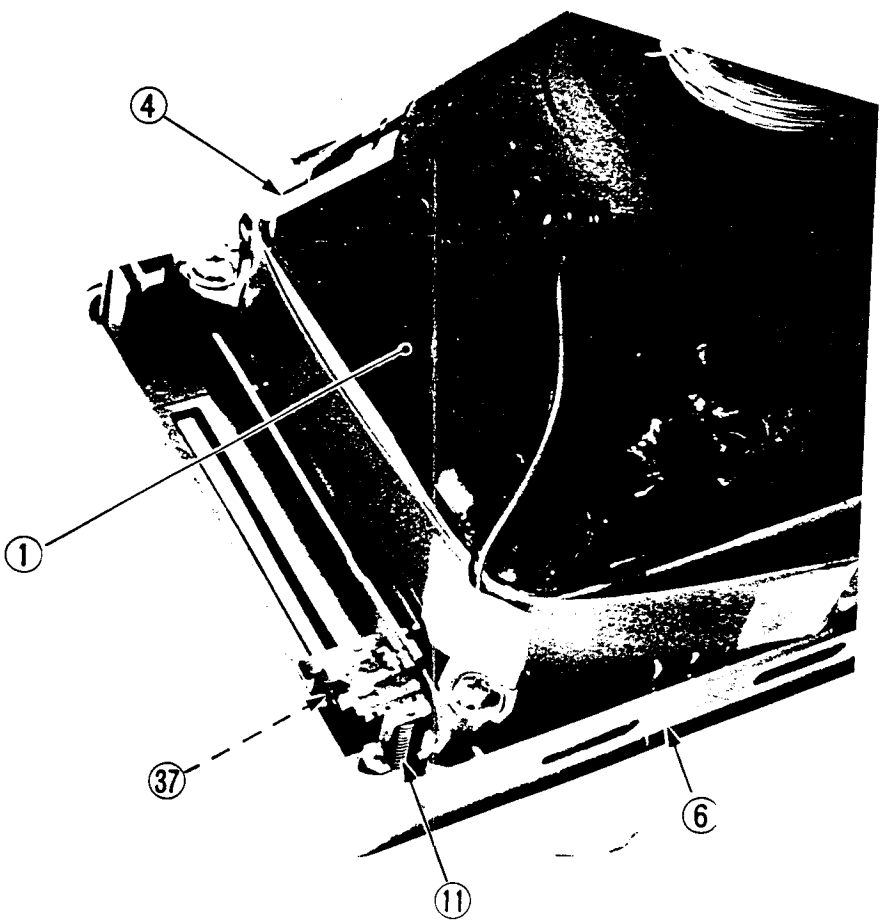
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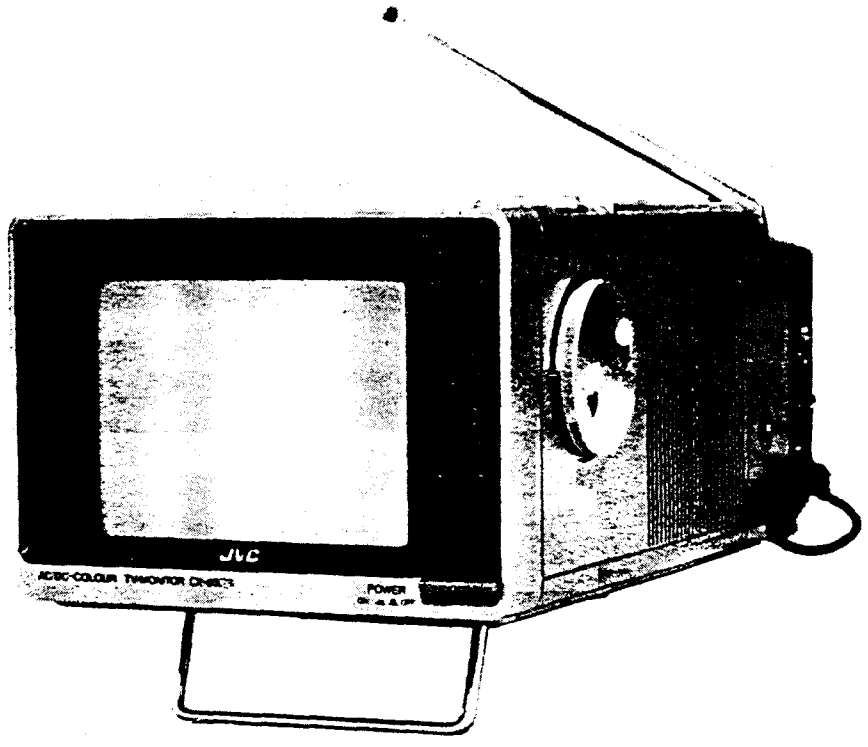
CX-60GB

JVC

SERVICE MANUAL

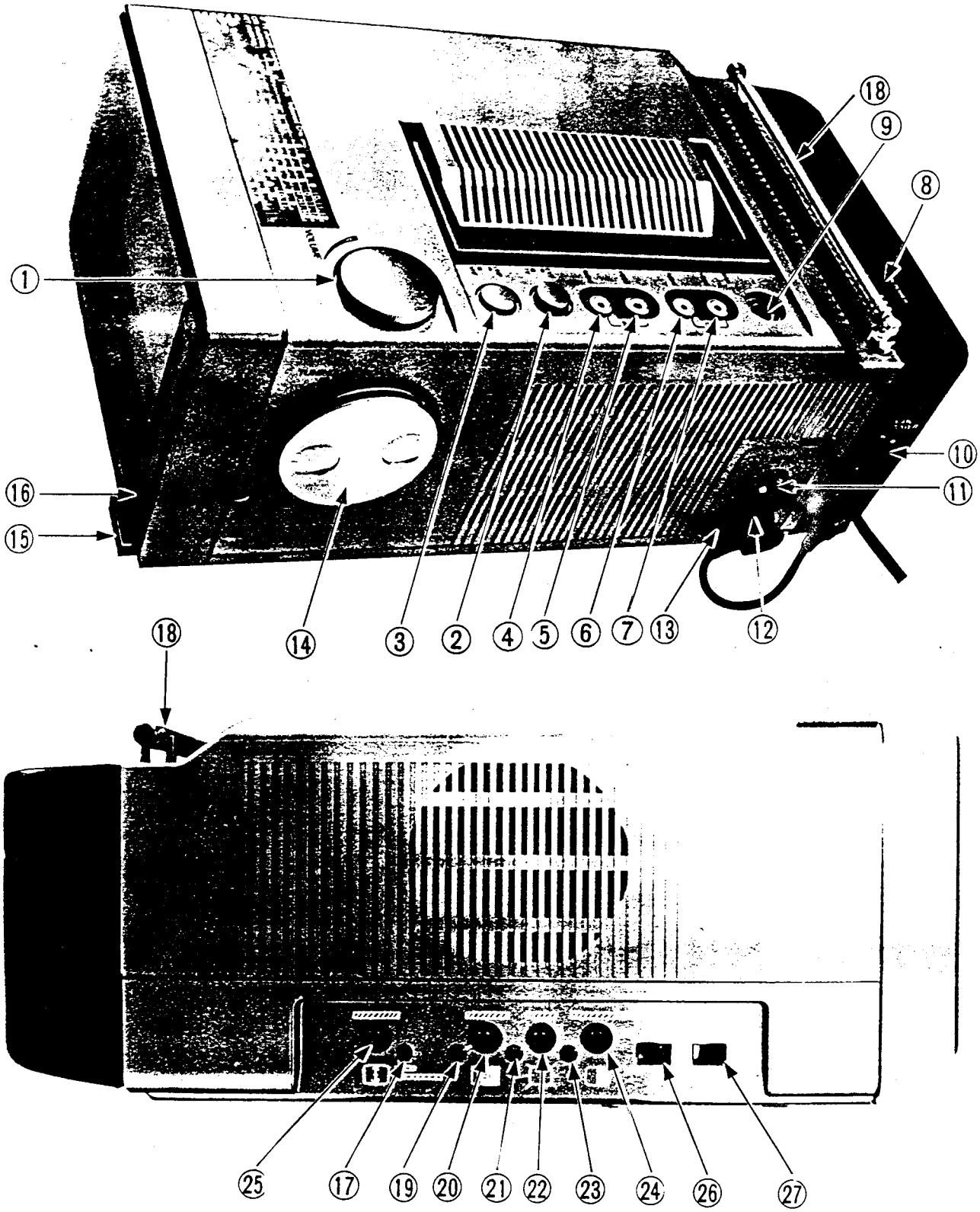
6" PORTABLE COLOR TV

MODEL ~~CX-60GB~~ CX-610



No.5548
Jun.1984

4. FUNCTIONS



① VOLUME	⑦ VIDEO TV OUTPUT	⑬ AFC	⑱ ROD ANT.	㉔ PICTURE
② TV ↔ EXT.	⑧ MAIN POWER IND.	⑭ TUNING	⑲ SUB COLOUR	㉕ V. HOLD
③ UHF ↔ VHF	⑨ EARPHONE	⑮ POWER SW.	⑳ COLOUR	㉖ COLOUR SYSTEM
④ AUDIO EXT. INPUT	⑩ MAIN POWER SW.	⑯ POWER IND.	㉑ SUB BRIGHT	㉗ TV SOUND
⑤ VIDEO EXT. INPUT	⑪ EXT. ANT. TERM.	⑰ PAL SUB COLOUR	㉒ BRIGHT	
⑥ AUDIO TV OUTPUT	⑫ DC 12V IN		㉓ SUB CONTRAST	

9. OPTIONAL ACCESSORIES

(1) RECHARGEABLE BATTERY (CB-60E)

SPECIFICATIONS

Dimension : (W) 16.8 cm x (D) 5.9 cm x (H) 10.7 cm
Weight : 1.0 kg

Type	: Cylinder-closed type nickel-cadmium battery pack
Nominal voltage	: DC 12 V
Nominal capacity	: 2,200 mAh (5 hour rate)
Standard recharging time	: About 10 hours
Number of charging/ discharging cycles	: About 500 times
Operating temperature range	: 0°C ~ 40°C (32°F ~104°F) for charging -10°C ~ 40°C (-50°F ~104°F) for discharging -10°C ~ 30°C(-50°F ~ 86°F) in storage
Polarity of output plug	: ⊕—●—⊖
Semiconductor Quantity	: IC 1, Transistor 5

■ BATTERY SERVICE LIFE

	CB-60E Rechargeable Battery
When TV is playing	Approx. 100 minutes
Charging time	Approx. 10 hours

- This table is given for reference.
- Measurement was made when sound volume, colour tone, colour shade, brightness and picture knobs were centered and temperature at 20°C. The service life represents the time when both ends of the screen have begun to break off a little.

■ NOTE FOR CHARGING THE BATTERY FROM A CAR BATTERY

- Do not use an auto plug other than that specified.
- Be sure to charge while letting the car's engine idle. This is because it may become impossible to start the engine due to discharging for an extended period of time and draining the power of the car battery.
- It will take about 10 hours to fully charge the battery pack.

DO'S AND DON'TS FOR USING THE CB-60E BATTERY PACK

1. Do not use the CB-60E in combination with TV sets or charging units other than specified models.
   * The specified models refer to the JVC CX-60ME the provided AC power adaptor, and the models which are specified that they should be used in combination with the CB-60E in JVC instruction manuals.
2. Using the battery pack until the picture on the TV screen disappears will decrease its life.
   Therefore, recharge it as soon as possible if the TV picture begins to shrink.
3. If the battery pack becomes overdischarged, remove it from the TV, leave it untouched for more than 5 hours, and then recharge it.
4. Avoid charging continuously for more than 48 hours because this will decrease the battery pack's life.
5. When the battery pack has been overcharged at an excessive temperature, the charge indicator lamp will automatically go out, by means of a heat protection device.
   In this case, stop charging immediately, leave the battery pack untouched in a place of low temperature until it becomes normal, and after that, connect the battery pack to the TV set.
6. The battery will discharge naturally even when it is not used: The current capacity decreases proportionately. Therefore, be sure to recharge it before putting it to use.
7. The battery has reached the end of its life if the period of time that it can be used continuously becomes extremely short in spite of properly recharging it.
8. Observe the following "Don'ts": These could result in operation problems and malfunctioning.
   - Don't try to disassemble and reconstruct the battery pack.
   - Don't store it in a place of excessively high temperature.
   - Don't discard it into a fire.
   - Under no circumstances, short the battery pack's terminals.

■ REPLACEMENT PARTS LIST

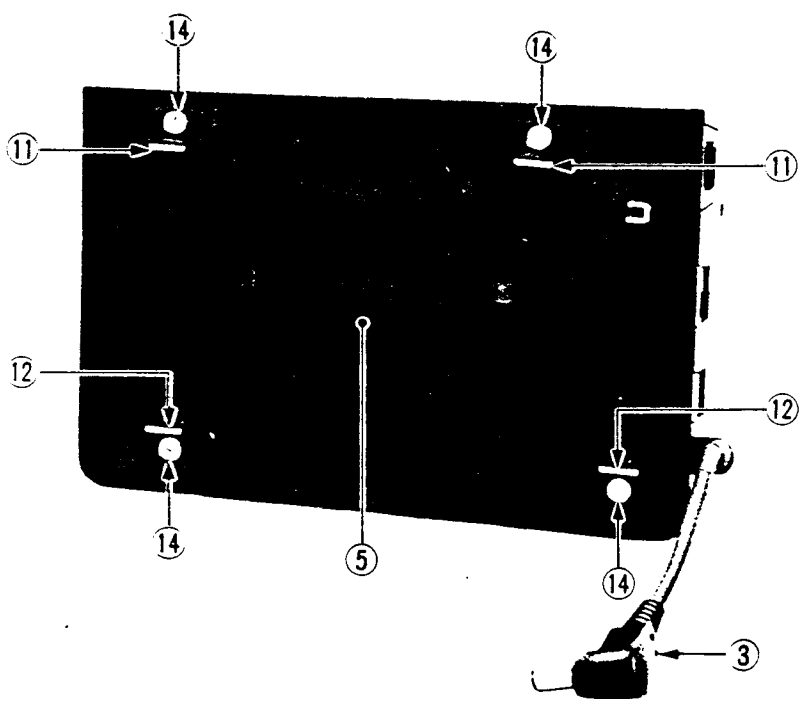
TRC-9281A (CHARGER PB ASS'Y)

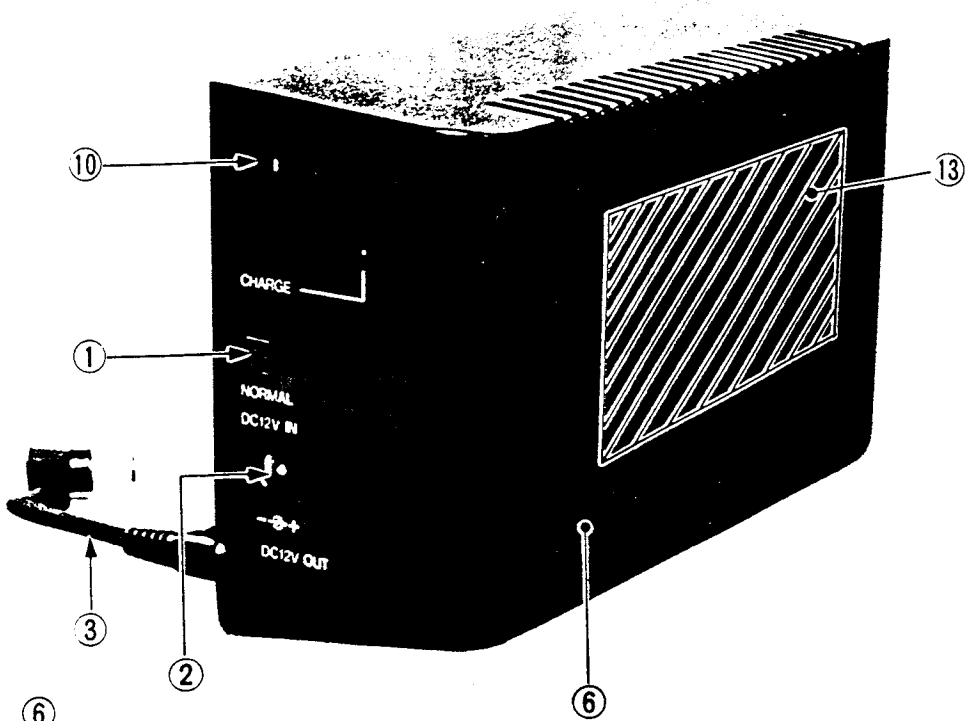
SYMBOL NO.	⚠	PART NO.	PART NAME	REMARK
RESISTOR				
R9003		QRG019J-331S	OM R	330Ω 1W J
9012		QRF106K-180	UNF R	18Ω 10W K
CAPACITOR				
C9002		QETB1VM-227	E Cap.	220μF 35V M
COIL				
L9001		CE40568-001	Choke Coil	
DIODE				
D9001		RD11E(B1)	Zener Diode	
9002		V19E	Si. Diode	
9003		V06C	"	
9004		GL-3PR2	LED	CHARGER IND.
9005		RD5.6E(B2)	Zener Diode	

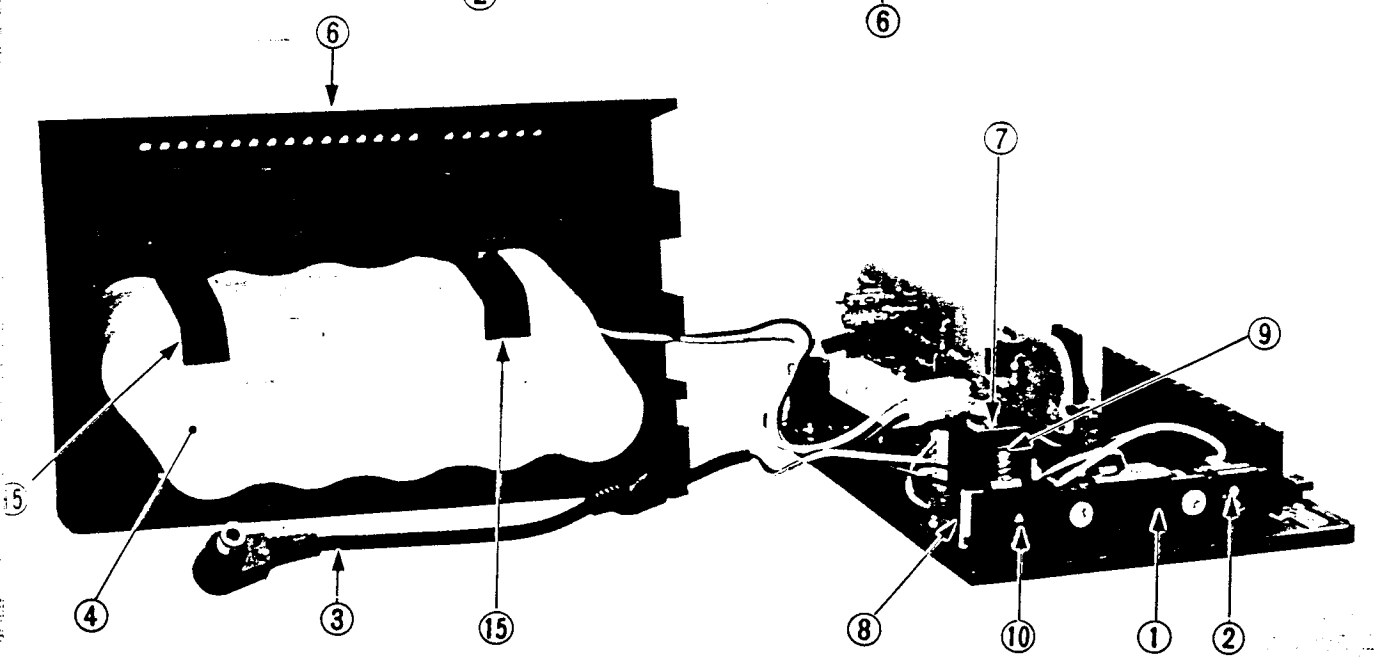
SYMBOL NO.	⚠	PART NO.	PART NAME	REMARK
TRANSISTOR				
Q9001		2SD637(Q,R)	Transistor	
9002		2SD1133(C,D)	Si. Transistor	
9003		2SD637(Q,R)	Transistor	
~ 5				
IC				
IC9001		AN5900	IC	
OTHER				
F9001	⚠	QMF51E2-2R0S	Fuse	2A
9002	⚠	-2R5S	"	2.5A

CHASSIS AND CABINET PARTS LIST

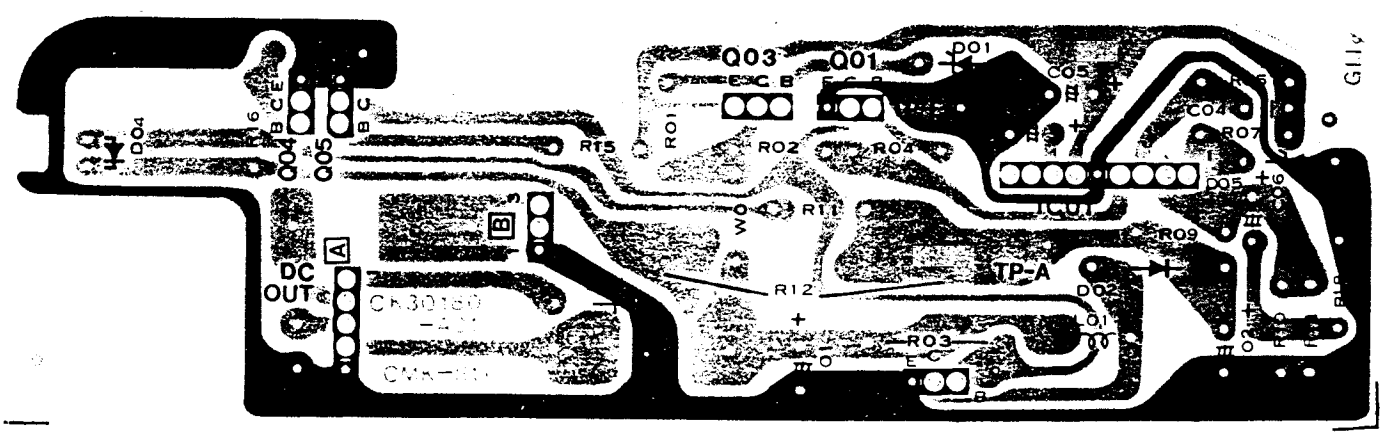
VIEW NO.	SYMBOL NO.	⚠	PART NO.	PART NAME	REMARK
1			CEX40066-001	Slide Switch	
2			A75907-A	EXT Battery Jack	
3			CEX40061-001	Plug & Lead Ass'y	
4			CE40571-00A	Battery	
5			CM20457-A02	Battery Base	
6			CM20458-B02	Battery Cover	
7			CM40258-A01	Spring Holder	
8			CM42581-001	Lock Bracket	
9			CM30861-015	Spring	
10			CM42079-002	Lock Knob	
11			CM42188-001	Hook	(x2)
12			CM42189-001	"	(x2)
13			CM42156-003	Serial Plate	
14			SSSP3006Z	Screw	(x4)
15			CM31004-B10	Stick Sheet	(x3)







CHARGER PB BACK PATTERN



■ PARTS LIST (Shaded parts in the schematic diagram)

Symbol No.	Part No.	Part Name
TRC-9281A (CHARGER PB ASS'Y)		
F9001	QMF51E2-2R0S	Fuse (2.0A)
F9002	QMF51E2-2R5S	" (2.5A)

■ SYMBOL NO. DISPLAY METHOD OF COMPONENTS

○ Inside PC board (example)
TRC-9281A: R9001 → R01

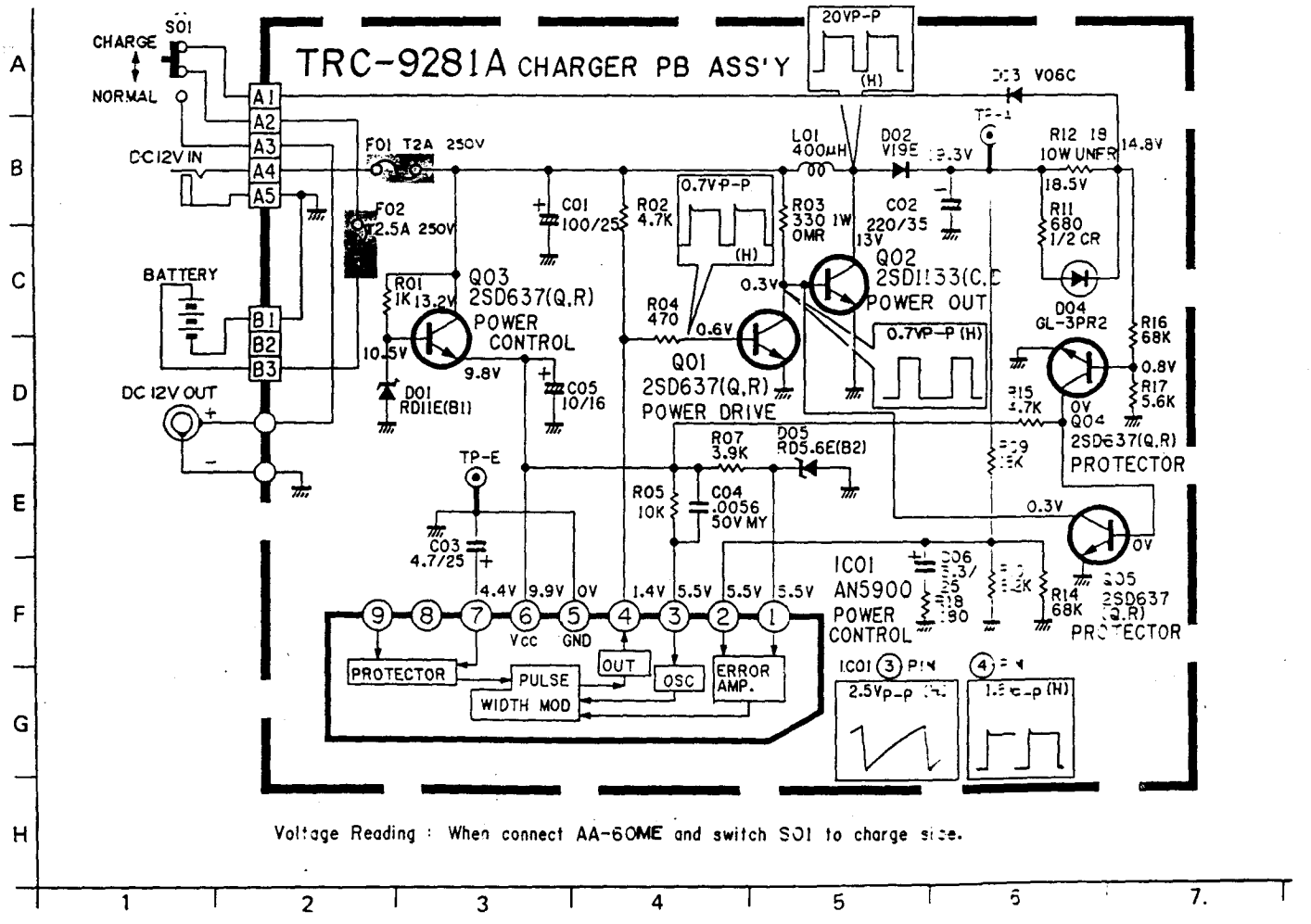
■ CIRCUIT DIAGRAM DISPLAY SYMBOLS

1. Resistor
   - ○ Resistance value
     When no unit is provided: (Ω)
     K: [kΩ]
     M: [MΩ]
   - ○ Rated permissible power capacity
     When no display is made: ¼ [W]
     Others: Display are provided
   - ○ Resistor type
     No type display : Carbon resistor
     OM R : Oxidized metal film resistor
     UNF : Unflammable resistor

2. Capacitor
   - ○ Capacity
     Over 1 [PF] Below 1 [μF]
   - ○ Withstand voltage
     No display : DC 50 [V]
     Others : DC withstand voltage [V]
     AC display : AC withstand voltage [V]
   - ○ Display of electrolytic capacitor is as follows.
     (Example)
     47/50 → Capacity [μF]/withstand voltage [V]
   - ○ Capacitor type
     No type display : Ceramic capacitor
     MY : Mylar capacitor

3. Connecting method
   - □ : Connector
   - ○ ○ : Wrapping or soldering

CB-60E SCHEMATIC DIAGRAM



Voltage Reading : When connect AA-60ME and switch S01 to charge side.

= CX 610 GB.

JVC CX-60GB SCHEMATIC DIAGRAM

■ NOTICE

- Voltage values and waveforms are measured by respectively receiving and displaying on the screen the color bar signals of the PAL and SECAM.

  [Voltage value display method]
  The voltage values indicated within the circuits denote those obtained when PAL and SECAM color bar signals are received and displayed on the screen. However, as for those points where the voltage values are caused to vary by input signals (PAL/SECAM) discrimination is effected by indicating each voltage value of AUTO (PAL/SECAM) and SECAM.

The measurements were made with each VR under the condition just after the shipment. The figures of the signal circuits may be more or less different after adjustments, so use the figures simply for reference.

Multimeter used
DC 20kΩ/V
Given figures are all DC voltages.
Sweep speed of oscilloscope
H → 20 μS/div. V → 5 mS/div.
Others → sweep speed specified

Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

SAFETY

FR (-WW-FR) denotes a fusible resistor which operates as a fuse. When replacing fusible resistors parts indicated with black shading (▒▒▒) in the circuit diagrams, be sure to ensure safety by using designated parts.
As to other parts too, use designated parts to maintain safety and performance.

INDICATING METHOD OF PARTS SYMBOL NUMBERS

Inside board (Example) TRC-1280A: R1209 → R209
Outside board (Example) R0001 → R01

CIRCUIT DIAGRAM INDICATING METHOD

Resistor

- Resistance value
  Without unit: [Ω] K : [kΩ] M : [MΩ]
- Rated allowable power
  Without indication : 1/6 [W] Others : Indicated
- Type

Without indication	: Carbon resistor
OMR	: Oxide metal film resistor
UNF	: Unflammable resistor
MFR	: Metal film resistor
FR	: Fusible resistor

* Composition resistor 1/2 [W] is indicated as 1/2S or Comp.

Capacitor

- Capacitance
  Above 1 [pF] : Below 1 [μF]
- Pressure tightness

Without indication	: DC 50 [V]
Others	: DC pressure-tight [V]
AC indicated	: AC pressure-tight [V]

- Indications for electrolitic capacitors are as follows.
  (Example)
  47 50 → capacitance [μF] /pressuretightness [V]
- Type

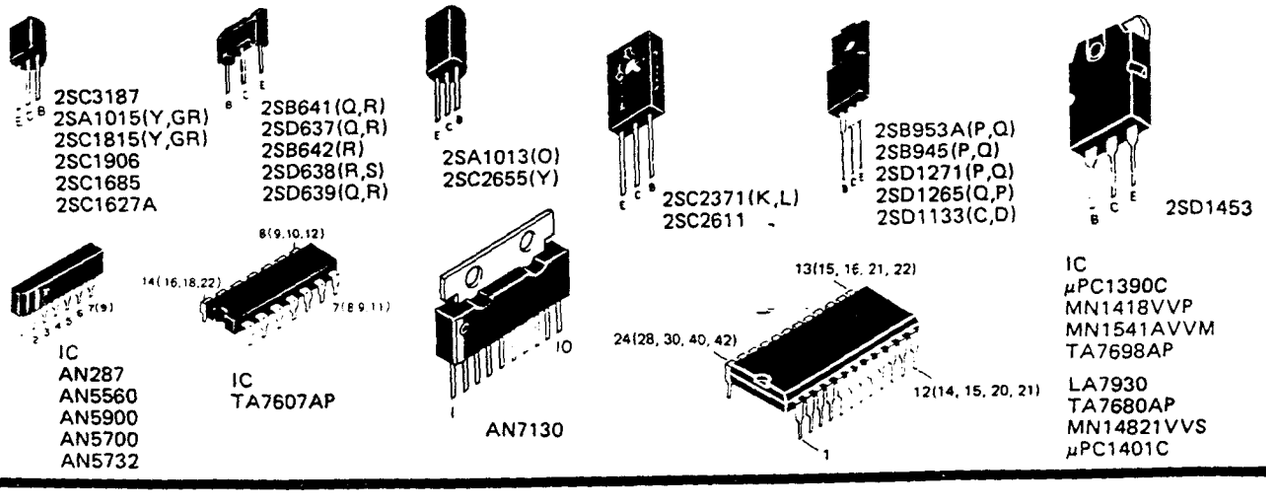
Without indication	: Ceramic capacitor
MY	: Mylar capacitor
MM	: Metalized mylar capacitor
PP	: Polypropylene capacitor
MPP	: Metalized polypropylene capacitor
NP	: Nonpolar electrolytic capacitor
BP	: Bipolar electrolytic capacitor
TAN.	: Tantalum capacitor

Coil
Without unit : [μH]

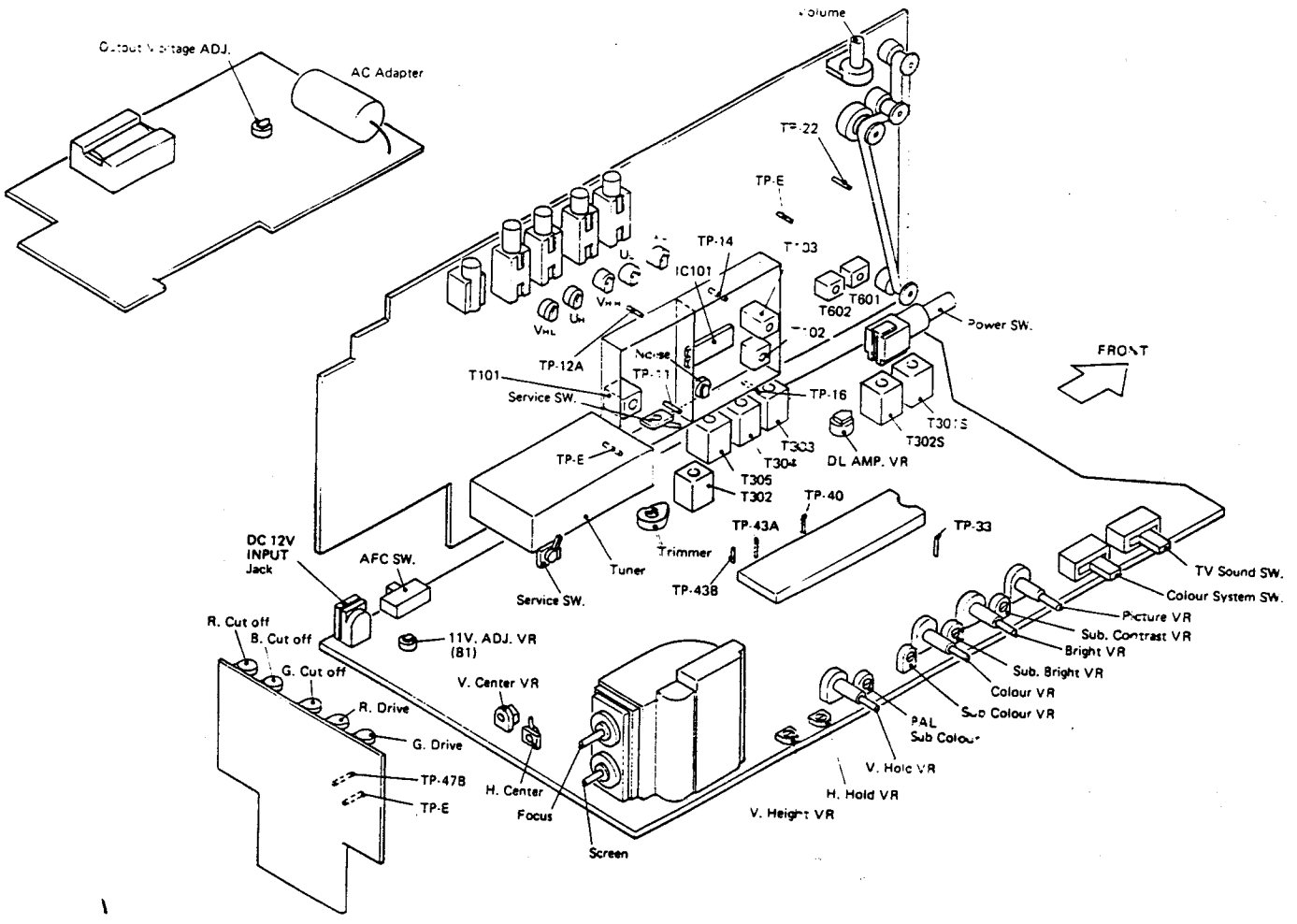
Test point & GND
⊙ : Test point by miniature GT pin
⊥ : Primary-side ground
⏚ : Secondary-side ground

Connection method
▭: Connector, ⇨ , ⇉ : Receptacle
o◯: Wrapping or soldering
* Each voltage reading specified.

■ BASINGS OF TRANSISTORS & ICs



■ ALIGNMENT LOCATIONS

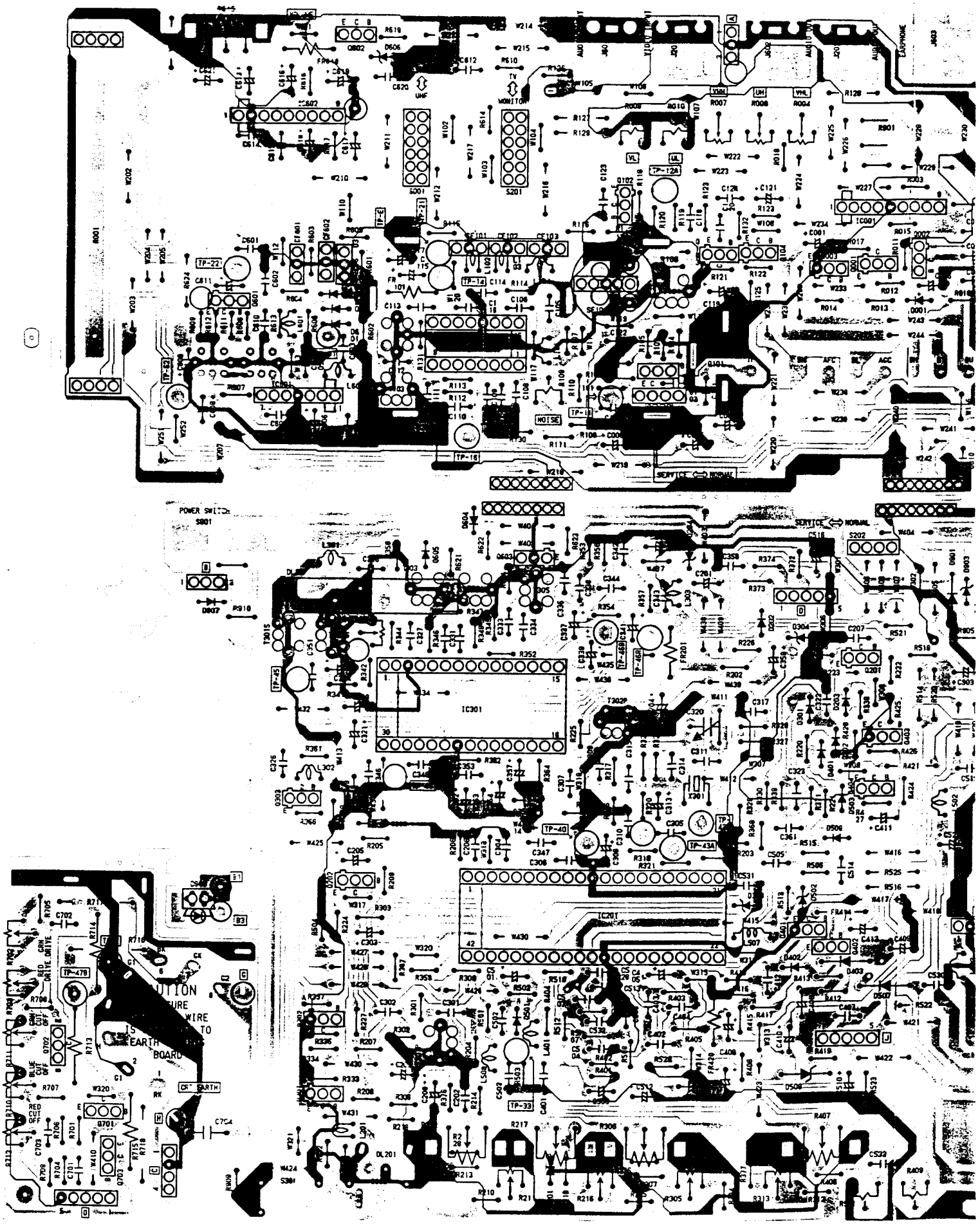


■ PARTS LIST (Shaded parts in the schematic diagram)

Symbol No.	Part No.	Part Name
TRC-1280A (MAIN P.B. ASS'Y)		
R1201	CE40731-4R7A	Posistor
1527	" -3R3	"
1529	" -100	"
1530	" -3R3	"
1531	" -3R3	"
1618	" -4R7A	"
1906	QRV141F-2701Y	MF R
1908	" -2701Y	"
C1519	QFP32DJ-273M	PP Cap.
1520	" -273M	"
1521	" -273M	"
FR1420	QRZ0054-100M	"
1518	" -2R2M	"
Q1502	2SD1271(P,Q)	Si. Transistor
D1508	HZ7B2L	Zener Diode
1903	MA4056(H)	"
T1502	CJ39591-001	H V Module
F1901	QMF51E2-2R0S	Fuse
	CE40541-00A	CRT Socket

Symbol No.	Part No.	Part Name
TRC-9280A (POWER P.B. ASS'Y)		
C9001	QFZ9017-104M	MM Cap.
9003, 4	QCZ9011-222M	C Cap.
9007	QFZ9017-104M	MM Cap.
9009, 10	QCZ9011-222M	C Cap.
9029	QCZ9011-472M	C Cap.
9036, 37	QCZ9011-222M	C Cap.
9042	QCZ9011-472M	C Cap.
S9001	CEX40376-001	Seesaw Switch
T9001	CE40710-00A	Line Filter
9002	A76567-MA	P. Drive Transf.
9003	CE40638-00A	Switching Transf.
F9001	QMF51E2-2R5S	Fuse
R9003	CE40643-001	Posistor
9038	QRZ0057-685	C R
OUTSIDE OF THE P.B. ASS'Ys		
V01	150CHB22-AE	Picture Tube
DY01	CJ26200-00A	Def. Yoke Ass'y
	QMP5138-200R	Power Cord

MAIN PB BACK PATTERN (CX-60GB)



1. SAFETY PRECAUTION

1. The design of this product contains special hardware, many circuits and components specially for safety purposes.
   For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of receiver should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in television sets have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list in Service manual may create shock, fire, or other hazards.
4. If any repair has been made to the chassis, it is recommended that the B_1 setting should be checked or adjusted (See ADJUSTMENT OF POWER SUPPLY).
5. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approvided by the manufacturer of the complete product.
6. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
   When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
8. ISOLATION CHECK
   (SAFETY FOR ELECTRICAL SHOCK HAZARD)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, channel selector knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   (1) DIELECTRIC STRENGTH TEST
   The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3,000V AC (r.m.s.) for a period of one second.
   (. . . . . withstand a voltage of 1,100V AC (r.m.s.) to an appliance rated up to 120V, and 3,000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
   This method of test requires a test equipment not generally found in the service trade.
   (2) LEAKAGE CURRENT CHECK
   Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.) Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
   • ALTERNATE CHECK METHOD
   Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.).
   Measure the AC voltage across the resistor with the AC voltmeter.
   Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).

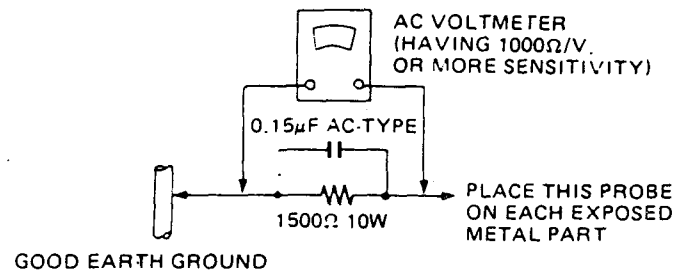
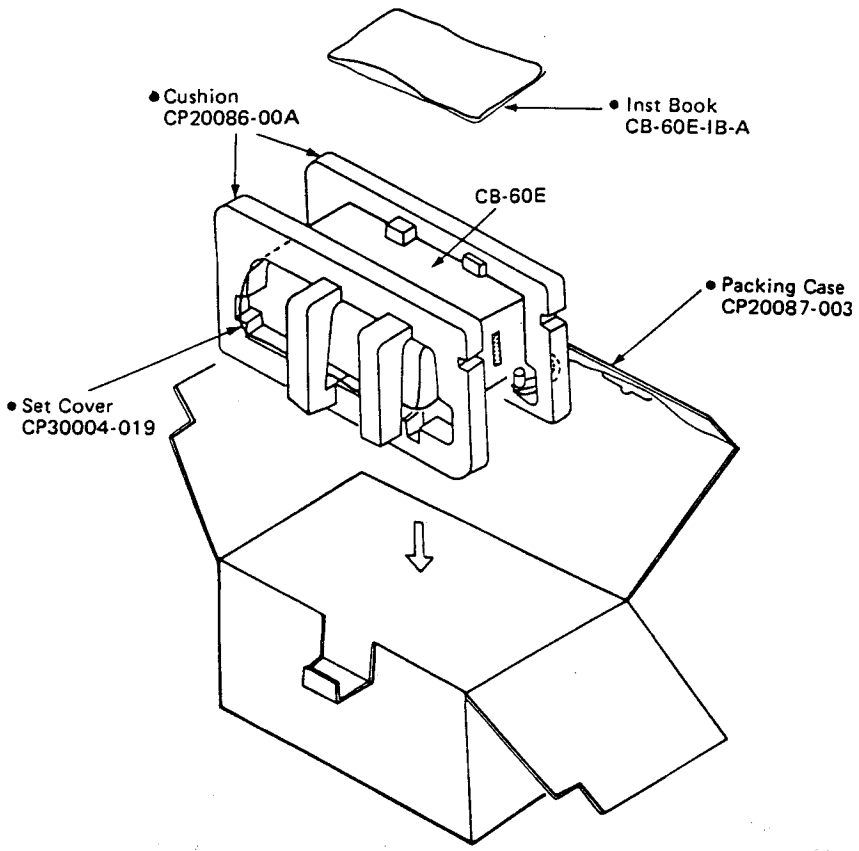


Fig. 1-1

PACKING DIAGRAM

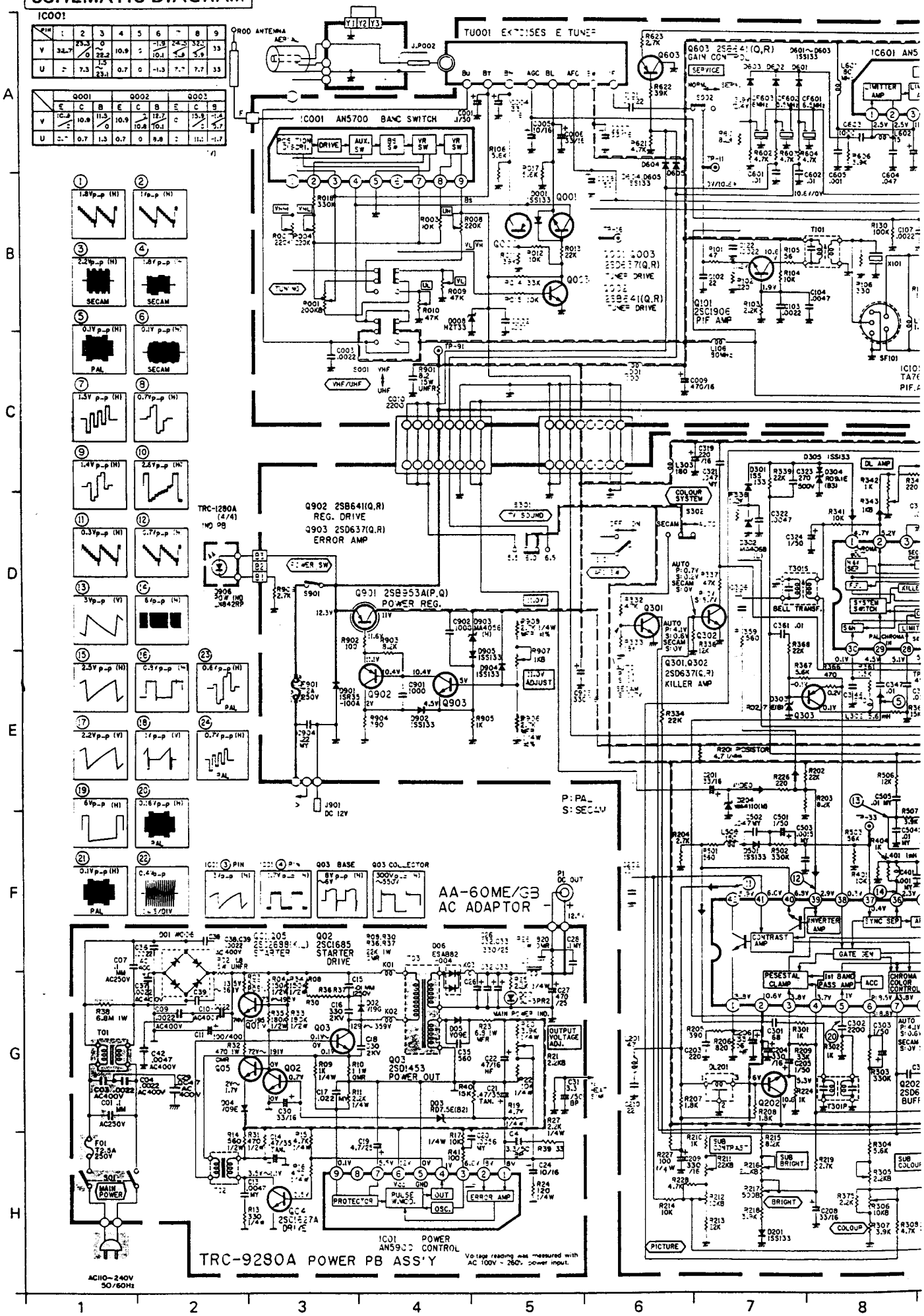


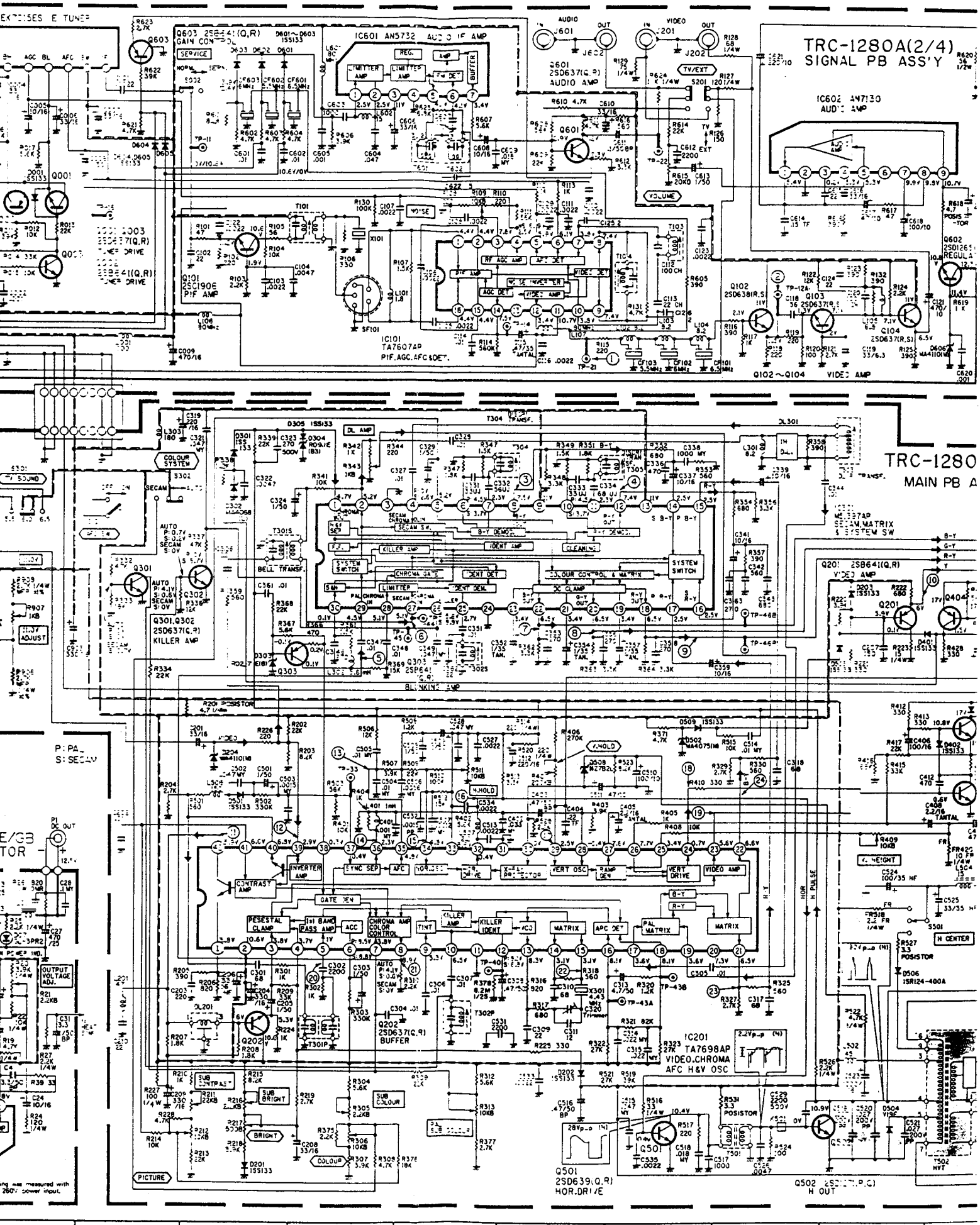
JVC

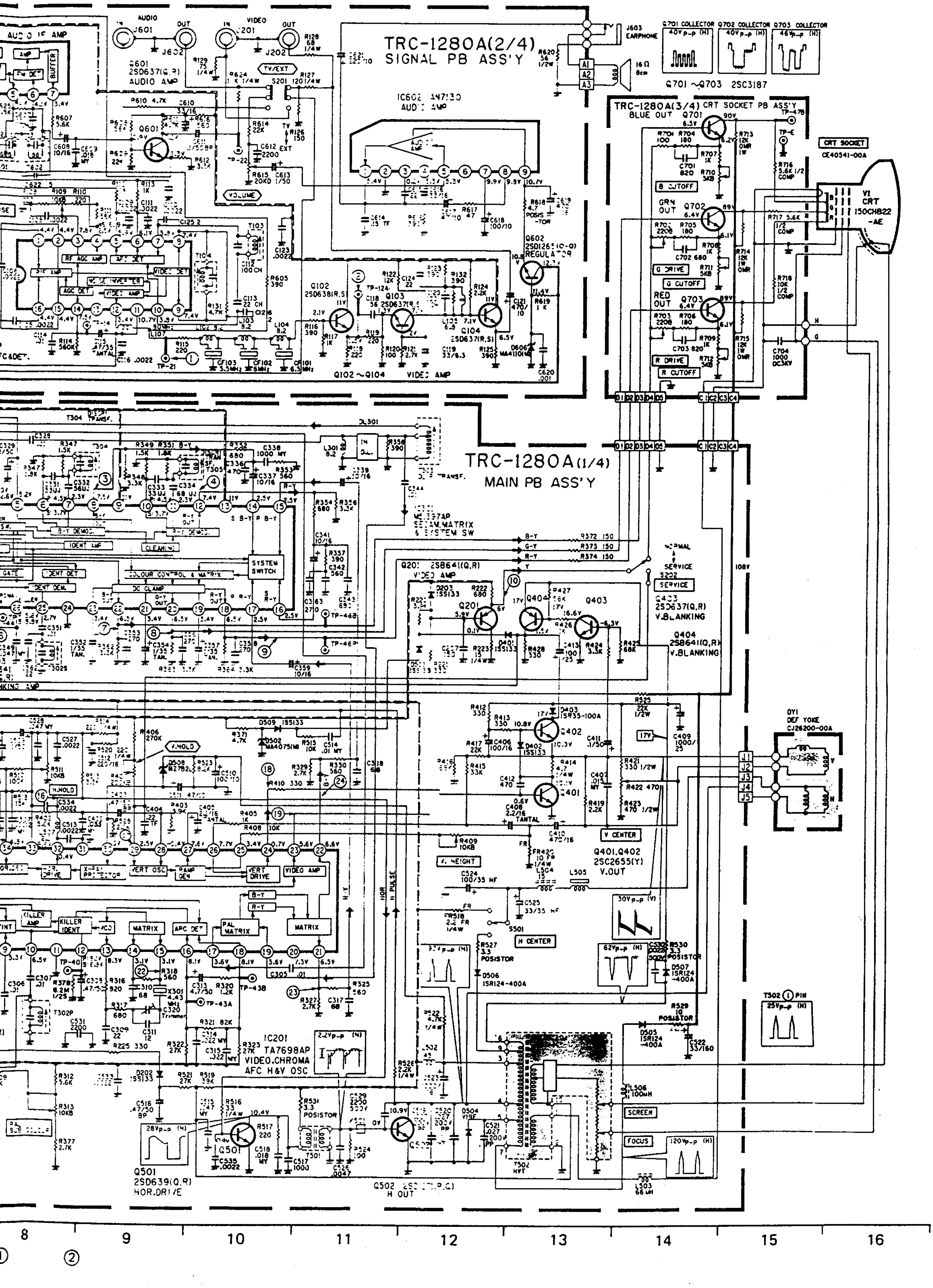
VICTOR COMPANY OF JAPAN, LIMITED
TELEVISION RECEIVER DIVISION 1106 Iwai-city, Ibaraki-prefecture, 306-06, Japan

Printed in
8403 Niss
SDK

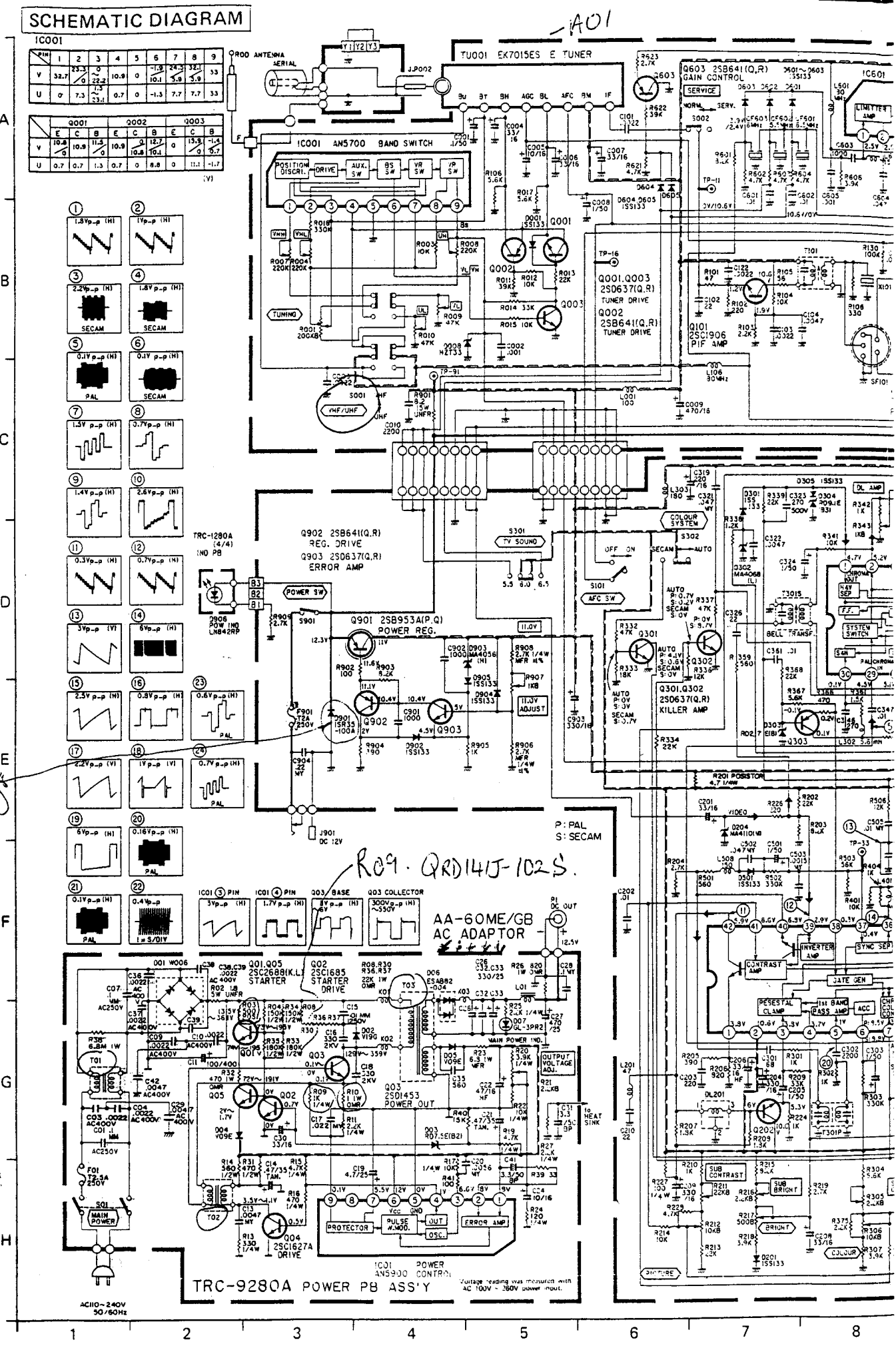
SCHEMATIC DIAGRAM




TRC-1280A(2/4)
SIGNAL PB ASS'Y
IC601 AN5732 AUDIO IF AMP
IC602 AN7130
AUDIO AMP
Q601 2SD637(Q,R)
AUDIO AMP
Q602 2SD1265
REGULATOR
Q101 2SC1906
PIF AMP
IC101 TA7607AP
PIF,AGC,AFC&DET.
Q102 2SD638(R,S)
Q103 2SD637(R,S)
Q104 2SD637(R,S)
Q102~Q104 VIDEO AMP
TRC-1280
MAIN PB A
IC201 TA7698AP
VIDEO,CHROMA
AFC H&V OSC
Q201 2SB641(Q,R)
VIDEO AMP
Q301,Q302 2SD637(Q,R)
KILLER AMP
Q303 2SB641(Q,R)
BUFFER
Q501 2SD639(Q,R)
HOR.DRIVE
Q502 2SD1265(P,Q)
H OUT
P: PAL
S: SECAM

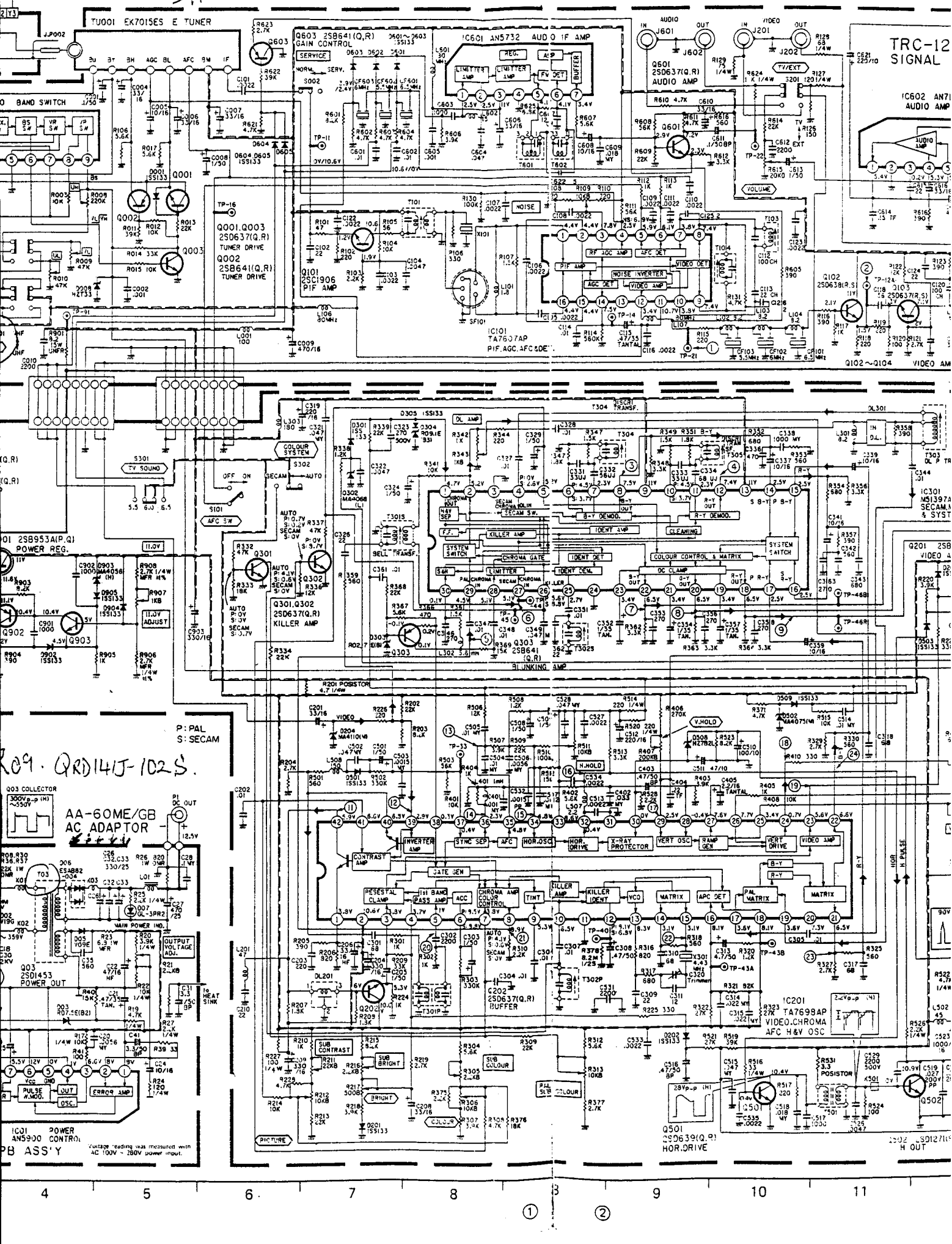

TRC-1280A(2/4)
SIGNAL PB ASS'Y
AUDIO
VIDEO
IN
OUT
J601
J602
J201
J202
Q601
2SD637(Q,R)
AUDIO AMP
TV/EXT
S201
VOLUME
IC602 AN7130
AUDIO AMP
J603
EARPHONE
16Ω
8cm
Q602
2SD1265(O-Q)
REGULATOR
AUDIO IF AMP
BUFFER
RF AGC AMP
AFC DET
VIDEO DET
AGC DET
VIDEO AMP
Q102
2SD638(R,S)
Q103
2SD637(R,S)
Q104
2SD637(R,S)
Q102~Q104 VIDEO AMP
CF103 5.5MHz
CF102 6MHz
CF101 6.5MHz
TP-21
TP-22
TP-12A
Q701 COLLECTOR 40Vp-p (H)
Q702 COLLECTOR 40Vp-p (H)
Q703 COLLECTOR 46Vp-p (H)
Q701~Q703 2SC3187
TRC-1280A(3/4) CRT SOCKET PB ASS'Y
BLUE OUT Q701
GRN OUT Q702
RED OUT Q703
B CUTOFF
G DRIVE
G CUTOFF
R DRIVE
R CUTOFF
TP-47B
TP-E
CRT SOCKET
CE40541-00A
V1
CRT
150CHB22
-AE
TRC-1280A(1/4)
MAIN PB ASS'Y
DL301
T304
T305
IC301
M51337AP
SECAM MATRIX
& SYSTEM SW
B-Y DEMOD.
R-Y DEMOD.
IDENT AMP
CLEANING
IDENT DET
IDENT DEM.
COLOUR CONTROL & MATRIX
SYSTEM SWITCH
DC CLAMP
TP-48B
TP-48A
R372 150
R373 150
R374 150
NORMAL
SERVICE
S202
SERVICE
Q201 2SB641(Q,R)
VIDEO AMP
Q403
2SD637(Q,R)
V.BLANKING
Q404
2SB641(Q,R)
V.BLANKING
108V
V.HOLD
H.HOLD
VERT OSC
RAMP GEN
VERT DRIVE
VIDEO AMP
X-RAY PROTECTOR
HOR. DRIVE
KILLER AMP
KILLER IDENT
VCO
MATRIX
APC DET
PAL MATRIX
B-Y
R-Y
TP-40
TP-43A
TP-43B
X301 4.43 MHz
IC201
TA7698AP
VIDEO.CHROMA
AFC H&V OSC
2.2Vp-p (H)
28Vp-p (H)
Q501
2SD639(Q,R)
HOR.DRIVE
Q502
H OUT
T501
T502
HVT
Q402
Q401
Q401,Q402
2SC2655(Y)
V.OUT
V CENTER
V. HEIGHT
H CENTER
S501
17V
DY1
DEF YOKE
CJ26200-00A
J1
J2
J3
J4
J5
30Vp-p (V)
62Vp-p (H)
T502 (1) PIN
25Vp-p (H)
SCREEN
FOCUS
120Vp-p (H)
L503 66μH
L506 100μH
D505 ISR124-400A
D506 ISR124-400A
D507 ISR124-400A
C522 33/160
8
9
10
11
12
13
14
15
16

SCHEMATIC DIAGRAM



CX-60GB CX-60GB +CX-610GB

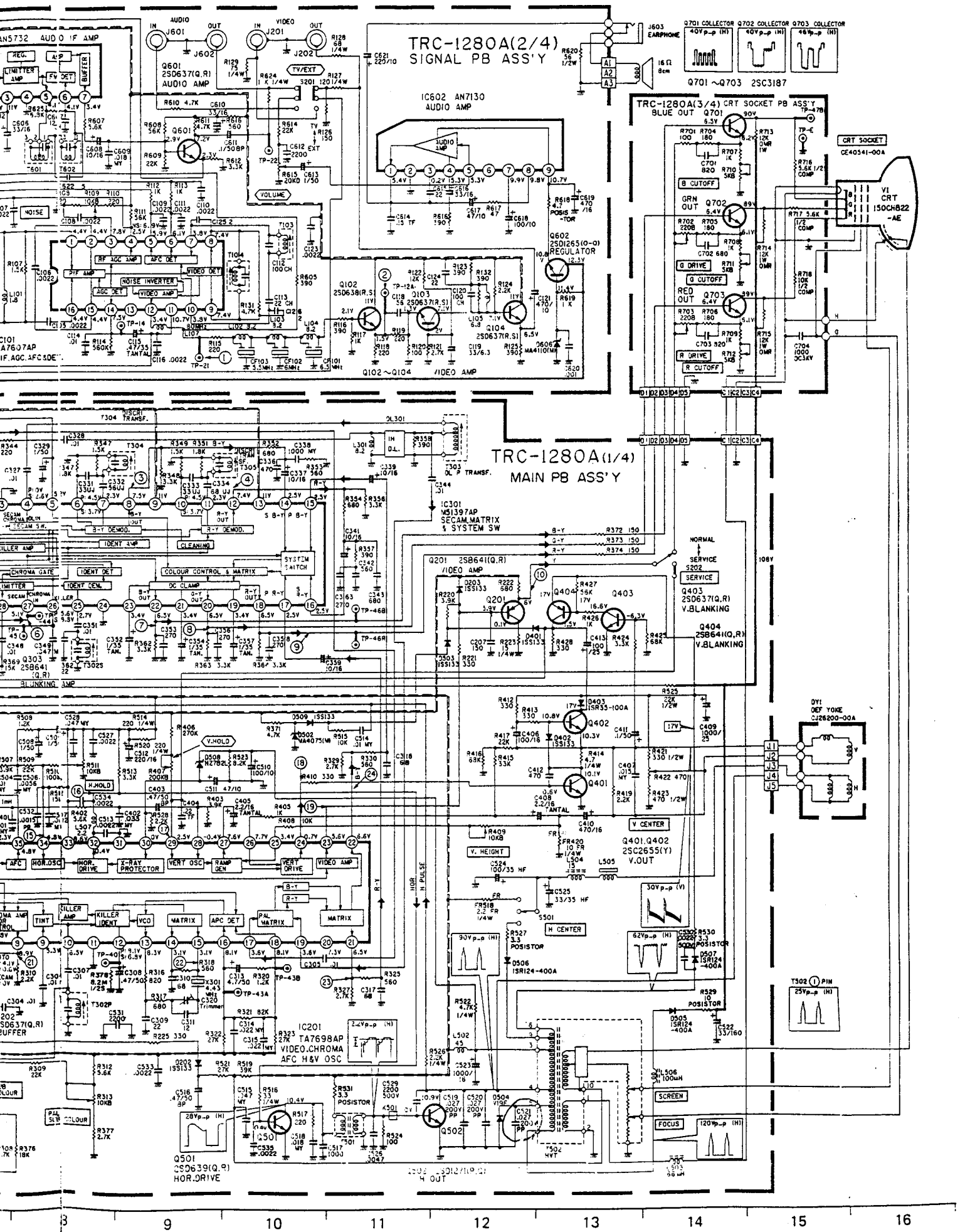
-A01



4 5 6 7 8 9 10 11

① ②

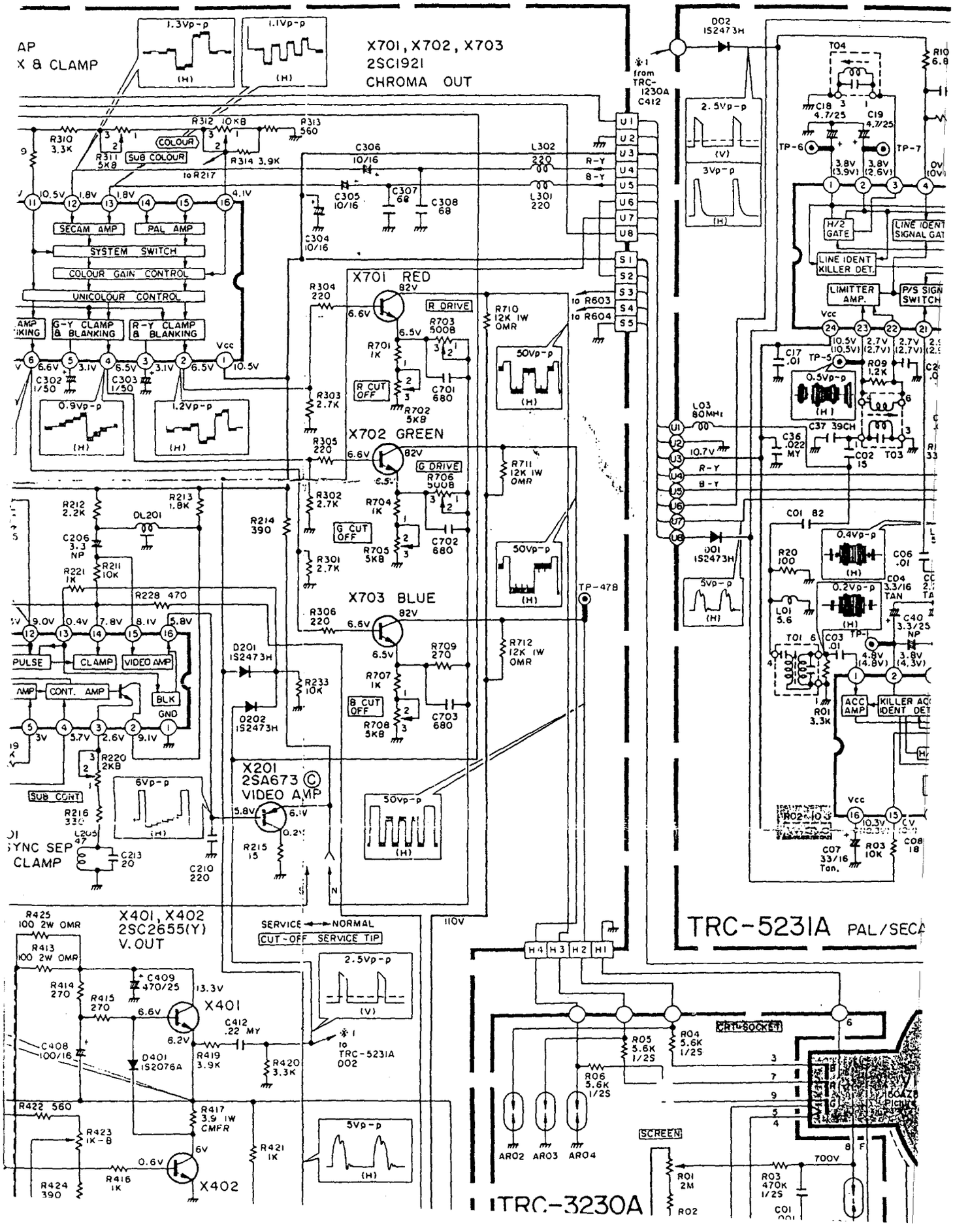
60GB CX-60GB + CX-610GB + CX-60ME



8 9 10 11 12 13 14 15 16

① ②

SCHEMATIC DIAGRAM



■HOW TO USE SERVICE MANUAL CX-60GB

Only the different items from the Service Manual CX-60ME are mentioned in the Service Manual CX-60GB.
As to the items which are not mentioned in this Service Manual, please refer to the Service Manual CX-60ME (No. 5513).

■METHODS FOR PARTS ORDERINR

Please place orders for repair parts after confirming an applicable model by the DIFFERENT PARTS LIST listed below and the parts list in the Service Manual CX-60ME (No. 5513).
PC Board Ass'y, however, are not proviced as a rule.

■MAIN DIFFERENCE BETWEEN CX-60GB & CX-60ME

The model CX-60GB differs from the Model CX-60ME mainly in power input.
Pay attention to the following different parts because of a difference in power input.

- SPECIFICATIONS

	CX-60ME	CX-60GB	Remarks
Power input	100V ~ 260V AC	110V ~ 240V AC	

- VOLTAGE READING FOR CB-60E

	CX-60ME	CX-60GB	Remarks
Voltage reading	When connect AA-60ME and switch S01 to charge side.	When connect AA-60GB and switch S01 to charge side.	CB-60E Schematic Diagram. (On page 21)

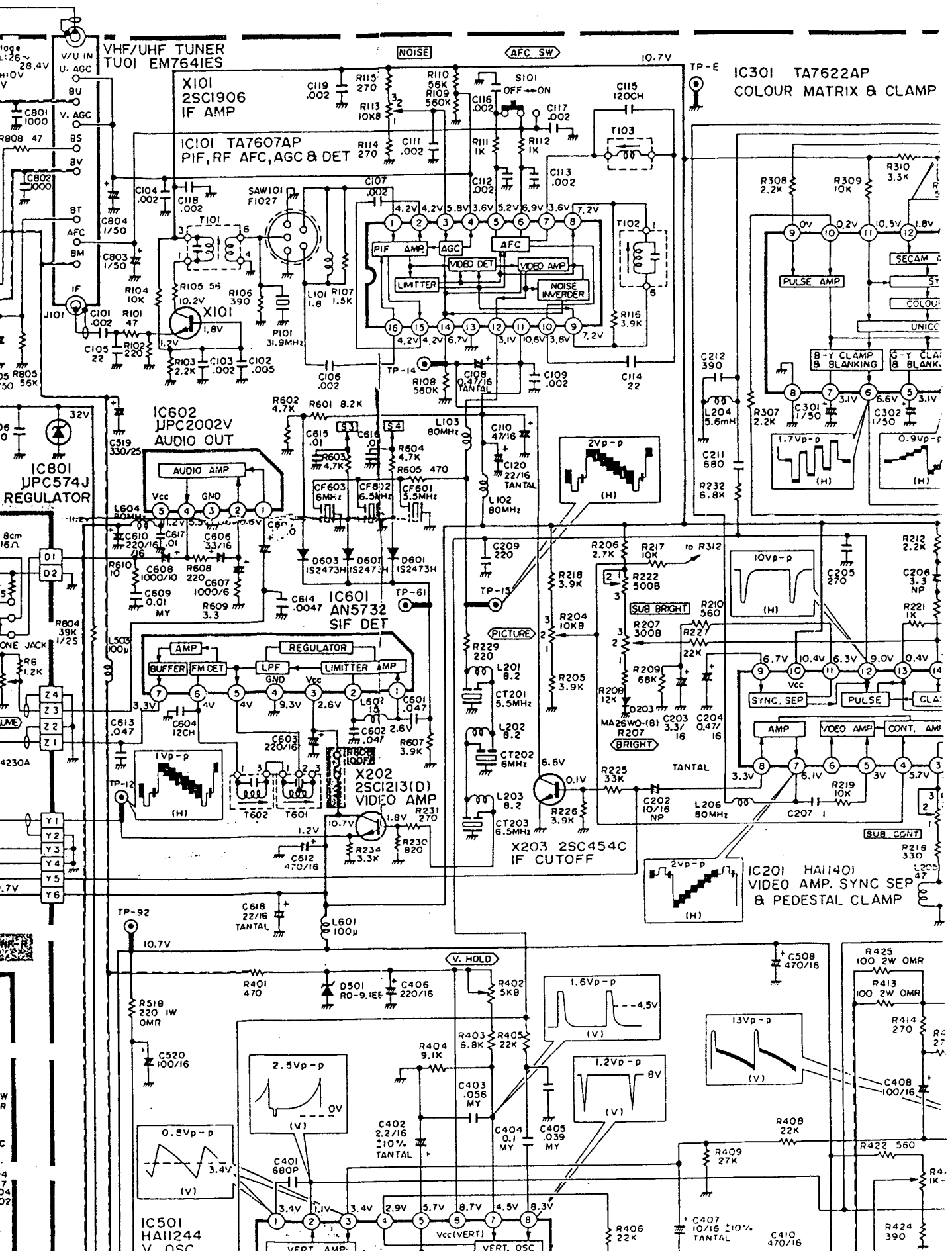
- DIFFERENT PARTS LIST

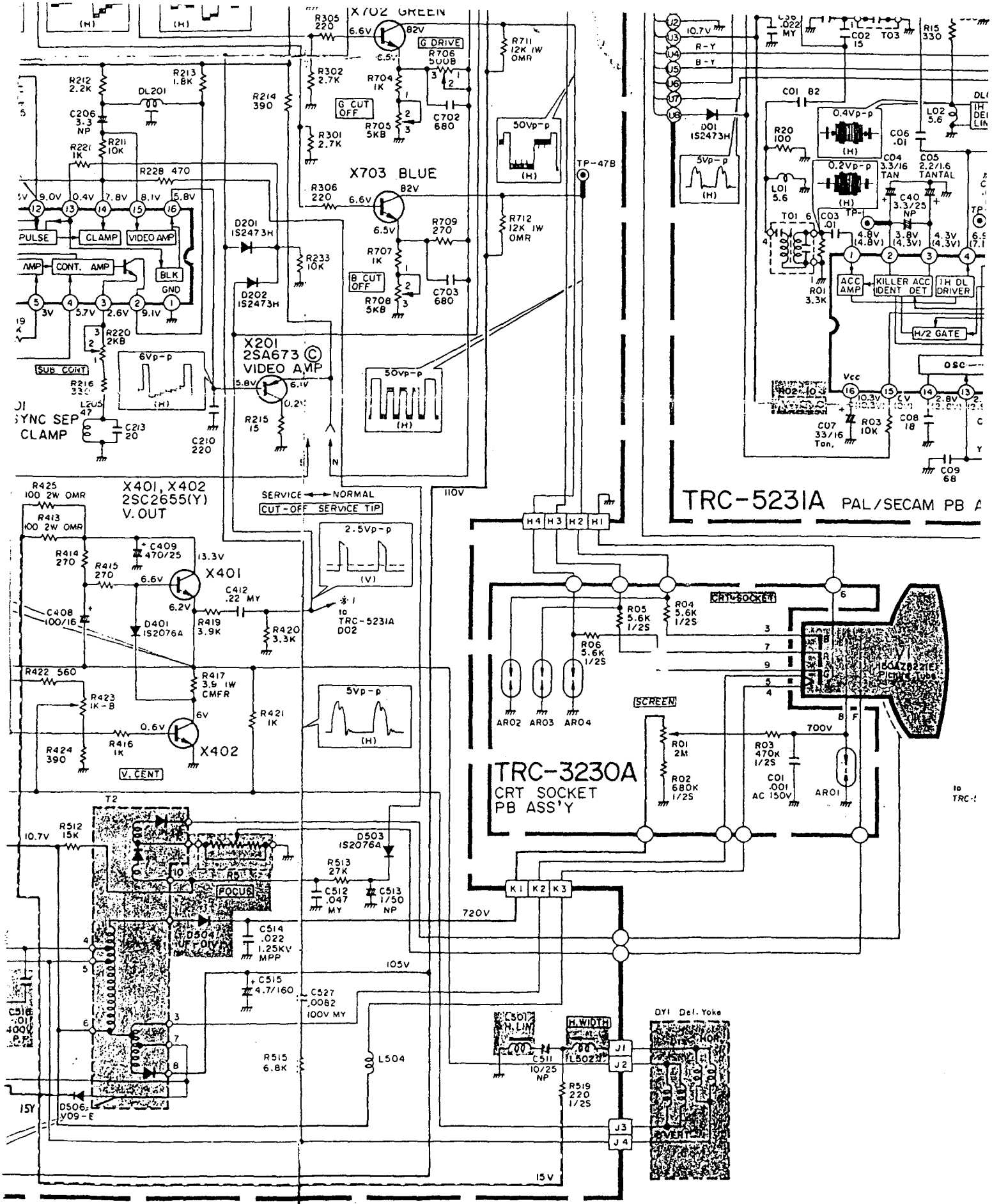
AA-60ME Parts Number		AA-60GB Parts Number	Parts Name	Remarks
CM42136-003	⟷	CM42136-004	Serial plate	Refer to chassis and cabinet parts list. (On page 16, View Number 8)
⚠ QMP4018-200R	⟷	⚠ QMP5138-200R	Power cord	Refer to chassis and cabinet parts list. (On page 16, View Number 10)

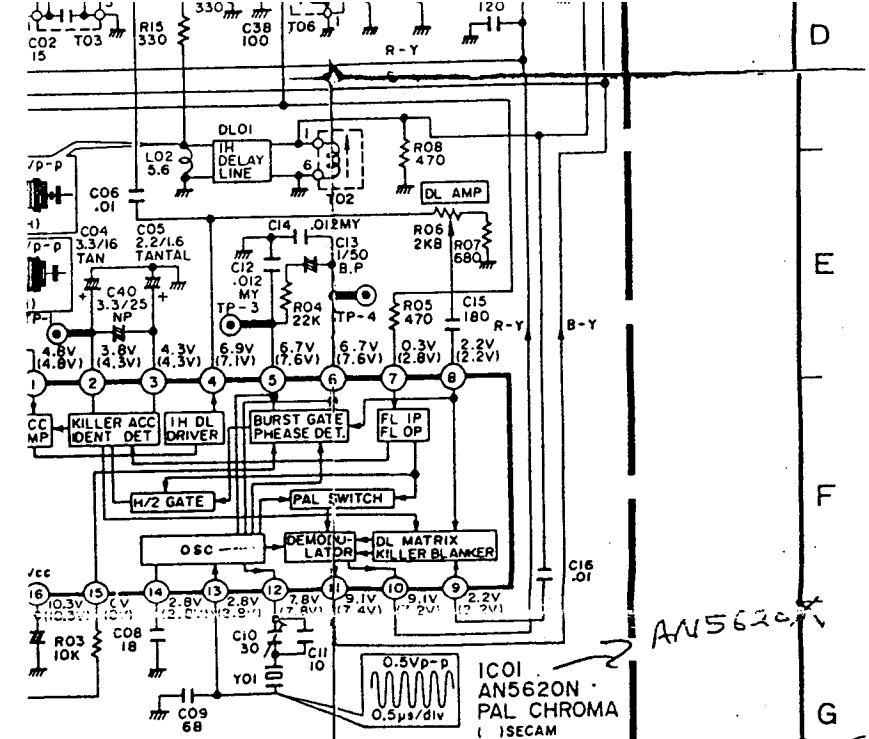
- DIFFERENT PARTS LIST

CX-60ME Parts Number		CX-60GB Parts Number	Parts Name	Remarks
CM20505-001	⟷	CM20505-002	Rating label	Refer to chassis and cabinet parts list. (On page 12, View No. 29)
CM10244-A0C	⟷	CM10244-B0D	Front panel assembly	Refer to chassis and cabinet parts list. (On page 12, View No. 6)
CP10280-004	⟷	CP10280-005	Packing case	Refer to packing diagram (On page 11)
CX-60ME-IB-A	⟷	CX-60GB-IB-A	Inst. book	Refer to packing diagram (On page 11)
BT-20067	⟷	BT-20021	Safety tips	Refer to packing diagram (On page 11)
———	⟷	BT-20060	Warranty card	
———	⟷	BT-20066	Address card	Added to ATTACHED MATTERS in packing diagram (On page 11)
———	⟷	JAPAN-ST	Japan sticker	

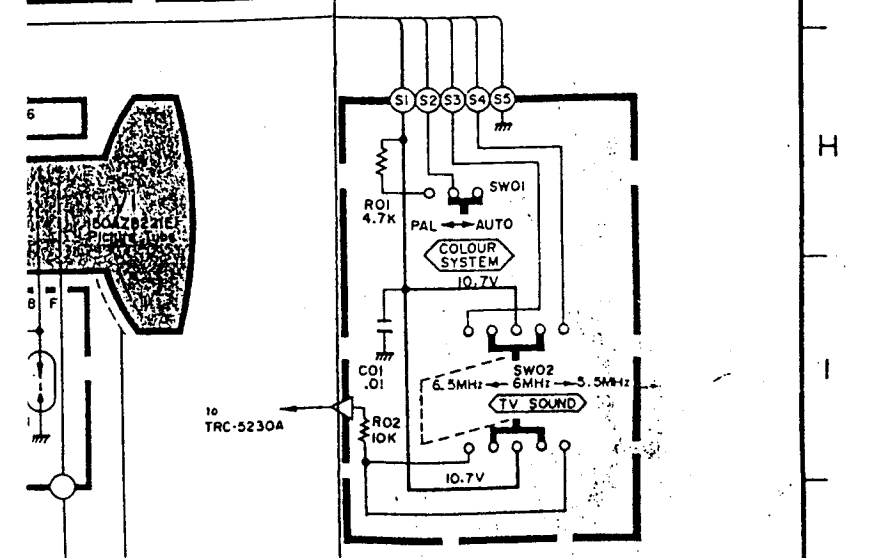
JVC MODEL CX-610ME CX-610GB SCI



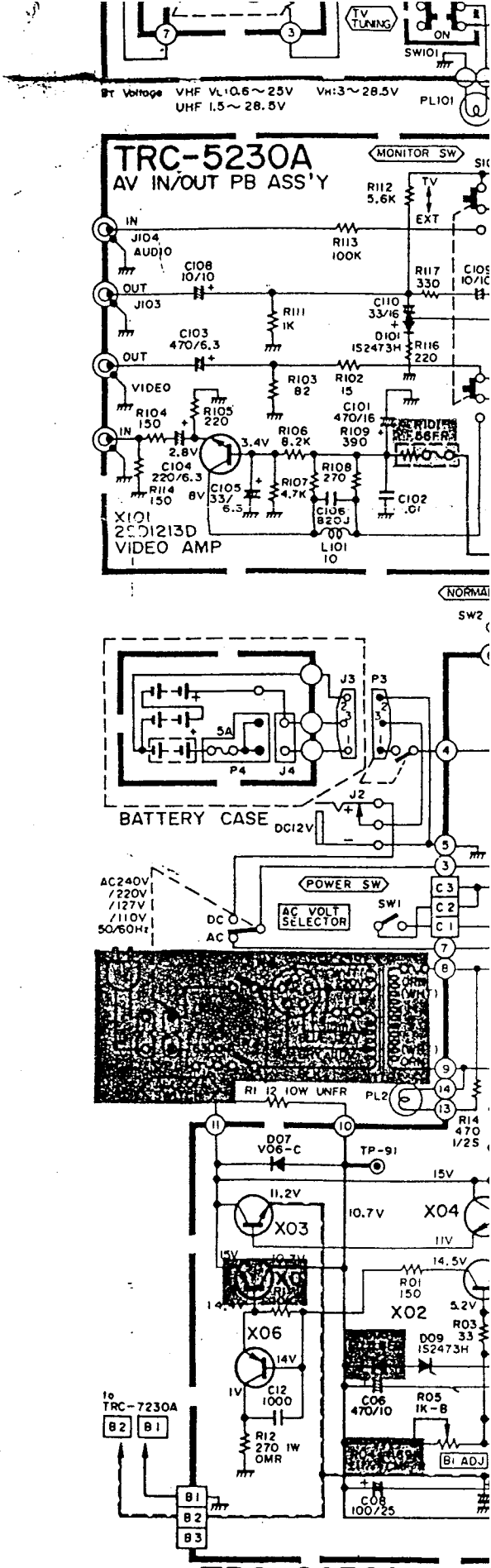

TRC-5231A PAL/SECAM PB A
TRC-3230A
CRT SOCKET
PB ASS'Y
X702 GREEN
X703 BLUE
X201
2SA673 ©
VIDEO AMP
X401, X402
2SC2655(Y)
V. OUT
X401
X402
SERVICE ↔ NORMAL
CUT-OFF SERVICE TIP
CRT SOCKET
SCREEN
FOCUS
G DRIVE
G CUT OFF
B CUT OFF
SYNC SEP
CLAMP
PULSE
CLAMP
VIDEO AMP
CONT. AMP
BLK
GND
SUB CONT
V. CENT
ACC AMP
KILLER ACC IDENT DET
1H DL DRIVER
H/2 GATE
OSC
Vcc
110V
720V
105V
15V
TP-47B
DY1 Def. Yoke
H. WIDTH
V. LIN
H. LIN
to TRC-5231A D02
to TRC-



PAL/SECAM PB ASS'Y



TRC-4230A
SIDE CONTROL PB ASS'Y

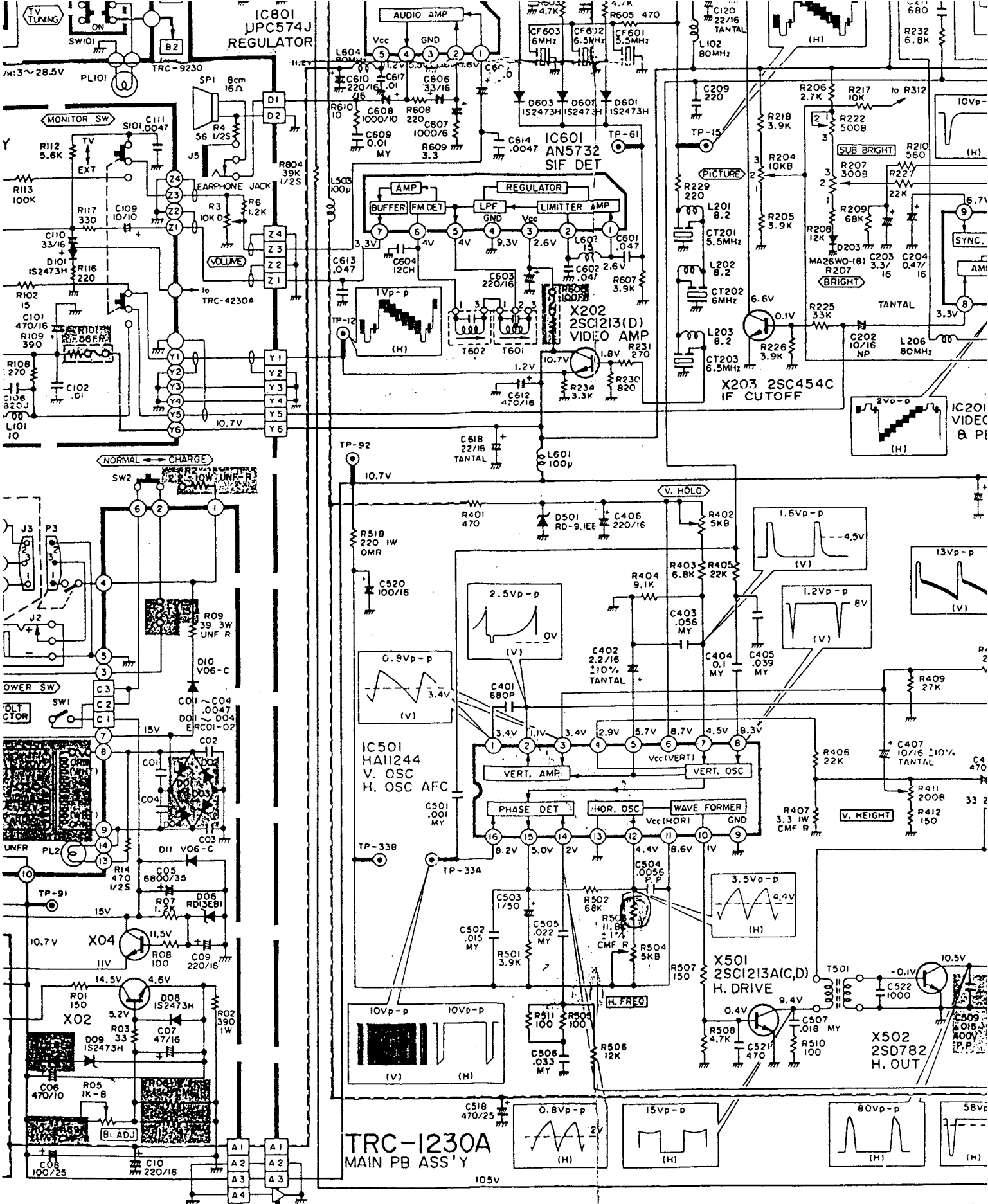


TRC-9230A
POWER PB ASS'Y

JVC
VICTOR COMPANY OF JAPAN, Ltd.
CX-610ME,GBHSA 550722

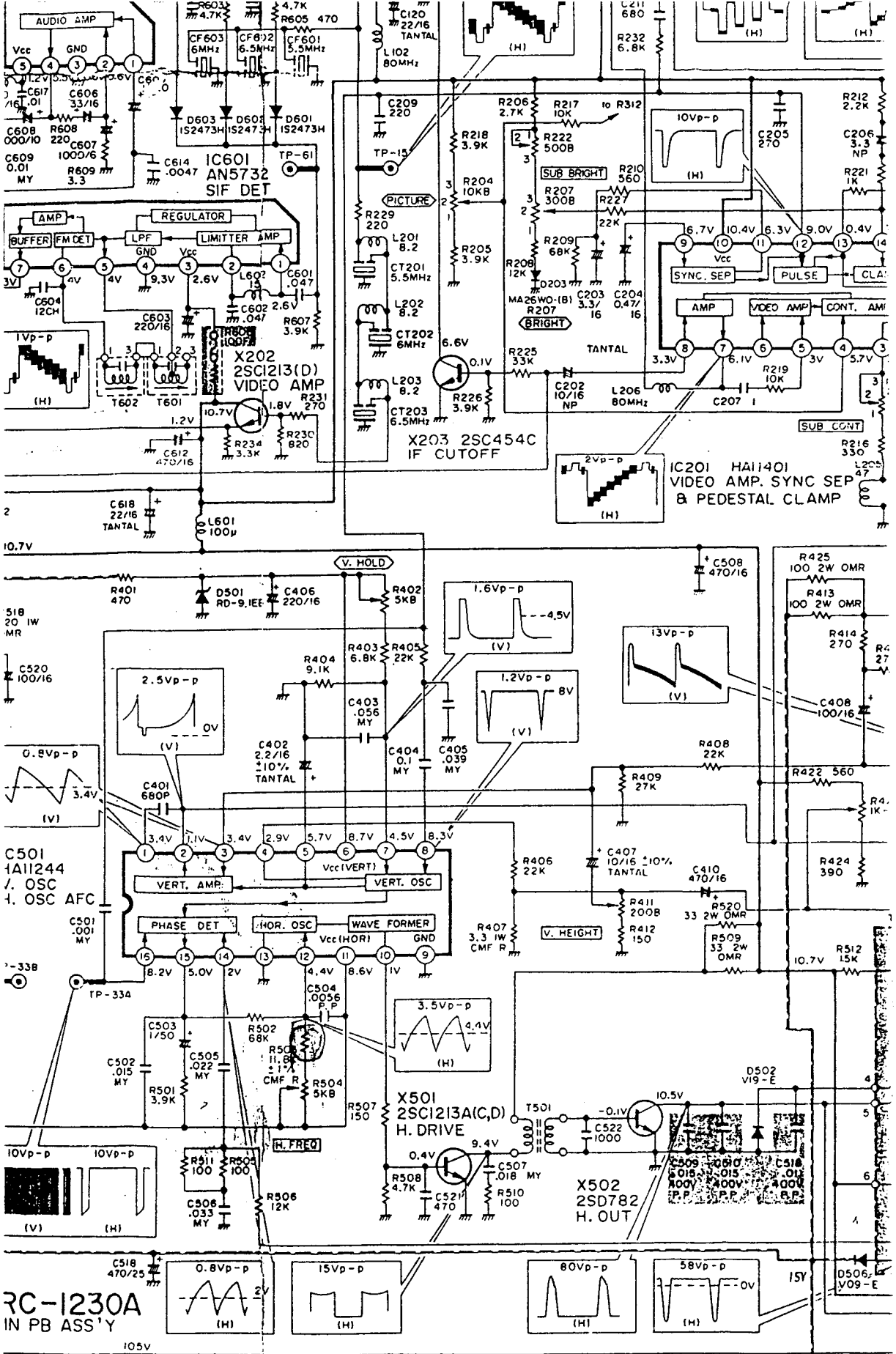
16 17 18

1 2 3



X01	2SB566(C,D)	POWER REGULATION
X02	2SC1213A(C,D)	ERROR AMP
X03	2SD476(C,D)	POWER REGULATION
X04	2SC1213A(C,D)	POWER DRIVE
X06	2SA673A	POWER REGULATION

3 4 5 6 7 8 9


AUDIO AMP
IC601 AN5732 SIF DET
AMP
REGULATOR
BUFFER
FM DET
LPF
LIMITTER AMP
X202 2SC1213(D) VIDEO AMP
X203 2SC454C IF CUTOFF
IC201 HA11401 VIDEO AMP. SYNC SEP & PEDESTAL CLAMP
SYNC. SEP
PULSE
SUB BRIGHT
BRIGHT
PICTURE
SUB CONT
V. HOLD
VERT. AMP.
VERT. OSC
PHASE DET
HOR. OSC
WAVE FORMER
V. HEIGHT
H. FREQ
X501 2SC1213A(C,D) H. DRIVE
X502 2SD782 H. OUT
RC-1230A
IN PB ASS'Y
105V
GULATION
P
GULATION
VE
EGULATION
5
6
7
8
9
10

2. FEATURES

- Copes with PAL/SECAM colour systems.
- 3 way power supply systems of AC Power/Car Battery/Rechargeable Battery.
- Adopts detachable AC adaptor.
- With A/V INPUT terminal and TV-OUT (A/V) terminal.
- With a carrying handle and a stand.
- With a rod antenna and an external ANT. terminal.
- Copes with broad-range input power by adopting switching regulator circuit.

3. OUTLINE

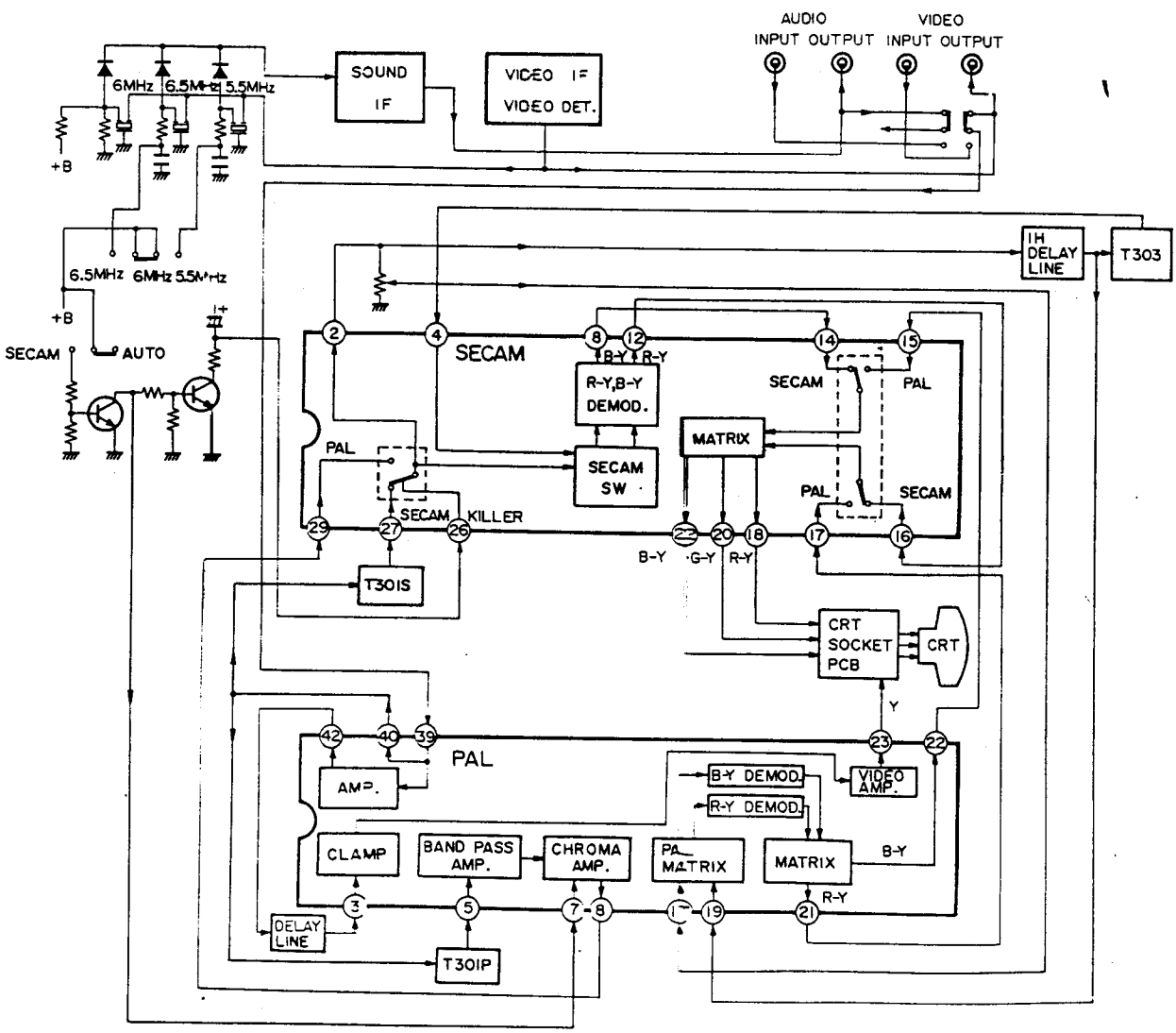
■ AUTOMATIC SWITCHING OF PAL/SECAM

1. When the PAL signal is input, the SECAM colour demodulation circuit does not operate; the SECAM killer circuit and the PAL circuit do. Similarly, when the SECAM signal is input, the PAL killer circuit and the SECAM circuit operate, but the PAL colour demodulation circuit does not.
2. A system for switching either the PAL or SECAM signal is built in the SECAM IC, which is operated by the killer voltage of the SECAM circuit described later.
3. The killer voltage gates the burst signal (SECAM uses a 4.25 MHz non-modulated carrier signal) at the back porch, a killer voltage based on the gated signal.

■ MANUAL SWITCHING OF SYSTEM

When the system switch is set to SECAM, the PAL killer circuit and the SECAM circuit operate, but the PAL colour demodulation circuit does not operate.

(BLOCK DIAGRAM)



5. HOW TO REMOVE FOR SERVICE

TOP CABINET REMOVAL

1. Pullout the TUNING KNOB and the VOLUME KNOB.
2. Remove the two screws (A) in Fig. 5-1 and the one screw (B), and then rod antenna.
3. The top cabinet is demountable by lifting it upward while pressing the locked points (C) [Fig. 5-1, Fig. 5-2].

BOTTOM COVER REMOVAL

1. Remove the one screw (A) in Fig. 5-3.
2. Pressing the locks points (B) and (C) in Fig. 5-3 & Fig. 5-4 and then remove the P.C. board from the bottom cover.
3. Draw the bottom cover to the arrow direction (E) while pressing the locked points (D) in Fig. 5-4.

* When removing the P.C. board, take care because UNF resistor touches CRT socket P.C. board.

DIAL BELT REMOVAL

1. Pullout the roller (A) in Fig. 5-5, and the dial belt is demountable or replaceable.

WIRE CLAMPING AND TYING BAND

1. Be sure to clamp the wire.
2. Never remove the tying band used for wire clamping. Should it be inadvertently removed, be sure to clamp the wire again, using insulating material.

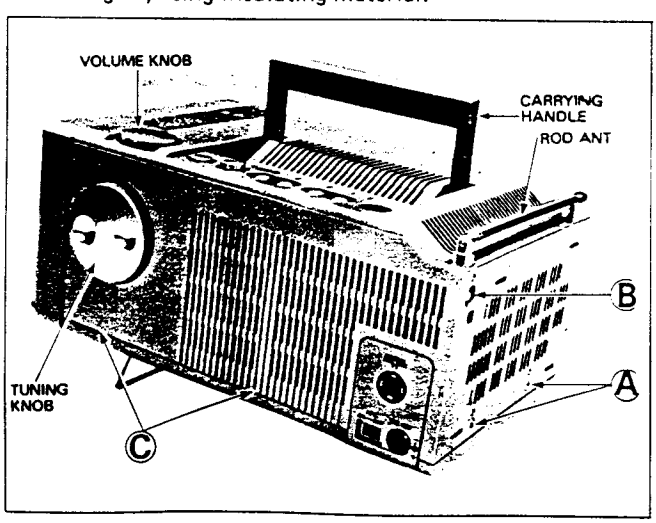


Fig. 5-1

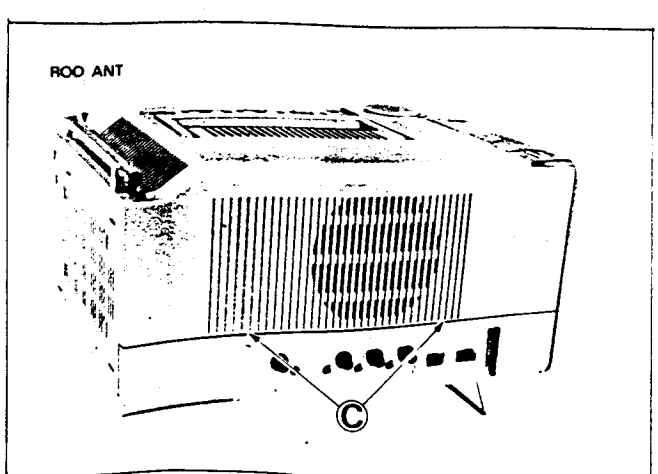


Fig. 5-2

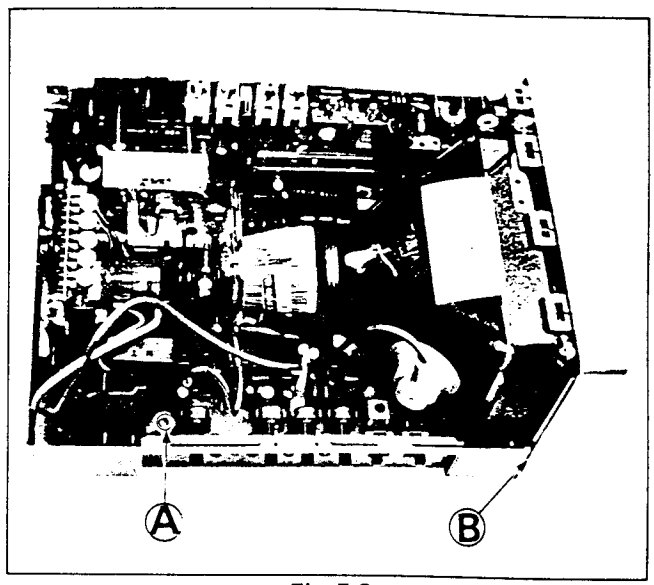


Fig. 5-3

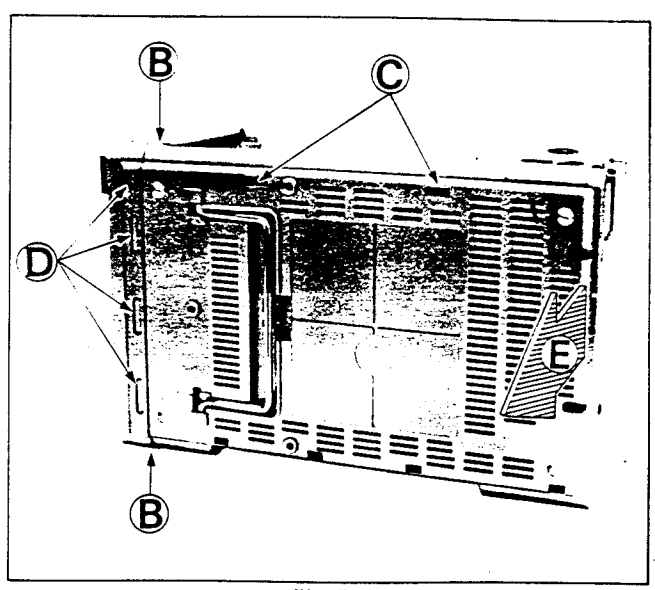


Fig. 5-4

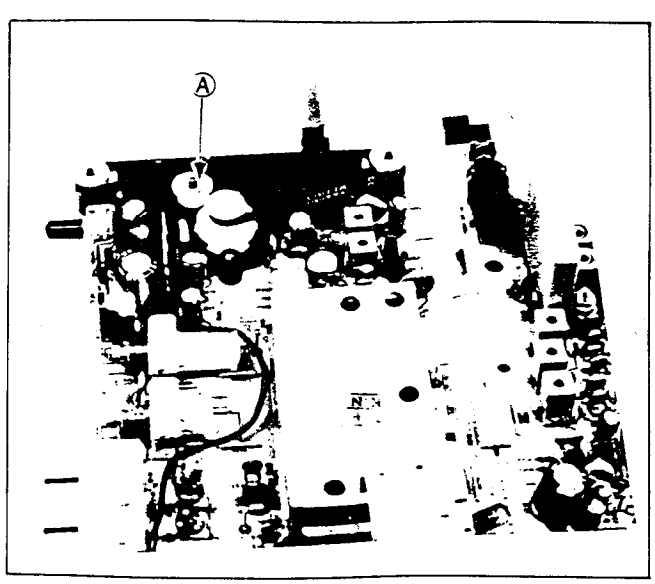


Fig. 5-5

9. (6. SERVICE ADJUSTMENTS

(1) RE

SPECIF

Dimensi
Weight
Type

Nomina
Nomina
Standar
Number
disch
Operatir

olarity
iemicon

O'S AI
ATTE
Do no
chargi
The s
provid
are sp
with t
Using
screen
Theref
picture
If the
from t
and th
Avoid
becaus
When
excessi
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ack u
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ack to
he ba
sed:
herefc

PURITY

1. Display a monochrome pattern.
2. As viewed from the back (See Fig. 6-1), turn the magnet lock counter-clockwise to loosen it.
3. Turn the green cutoff VR (R711) fully clockwise and the red and blue cutoff VRs (R712, R710) fully counter-clockwise. (Fig. 6-3)
   Adjust the screen VR (Fig. 6-3) so that the vertical green band becomes easy to see.
4. Loosen the deflection yoke securing screw and slide the yoke fully rearward to obtain colour shading in the green disk. (Fig. 6-2)
5. Overlap the two purity magnet tabs and set them to 12 o'clock position.
6. Open and close the two purity magnets (scissor fashion) and adjust so that the green disk is positioned at the center of the picture. (Fig. 6-2)
   If green disk is not obtained, adjust for uniform overall coloration.
7. Slide the deflection yoke forward and adjust its position so that the green colour completely fills the picture area.
8. Confirm that uniform overall rasters of both red and blue single colour rasters can also be obtained in the same manner.
9. Secure the deflection yoke retaining screw moderately so that the deflection yoke does not move back and forth.

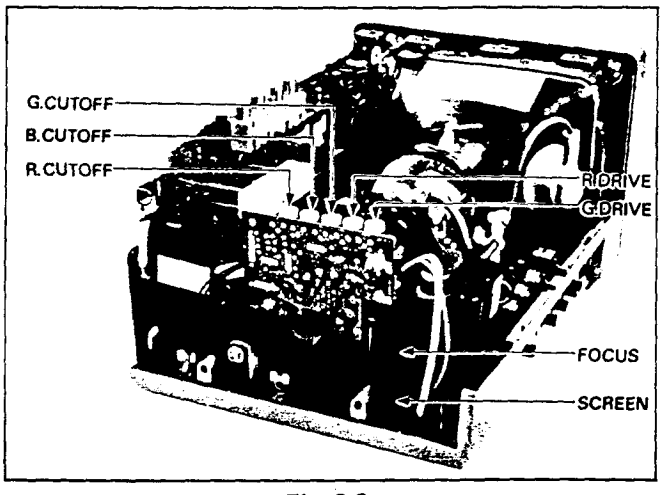


Fig. 6-3

STATIC CONVERGENCE (CENTER)

1. Employ a crosshatch pattern and adjust the brightness so that the image is clear, but slightly darkened.
2. Turn the red and blue cutoff VRs fully clockwise and the green cutoff VR fully counter-clockwise (Fig. 6-3). Adjust the screen VR (Fig. 6-3) for an easily seen image.
3. Adjust convergence roughly in the corner by tilting the deflection yoke vertically or horizontally, then insert a wedge between the yoke and CRT on top.(Fig.6-7)
4. Turn the two 4 pole convergence magnets and adjust so that red and blue become overlapped throughout the picture area to yield magenta. (Fig. 6-5)
5. Turn the green cutoff VR fully clockwise and adjust the two 6 pole convergence magnets so that the green and magenta become overlapped throughout the picture area to yield white. (Fig. 6-4)
6. Repeat steps 4 and 5.

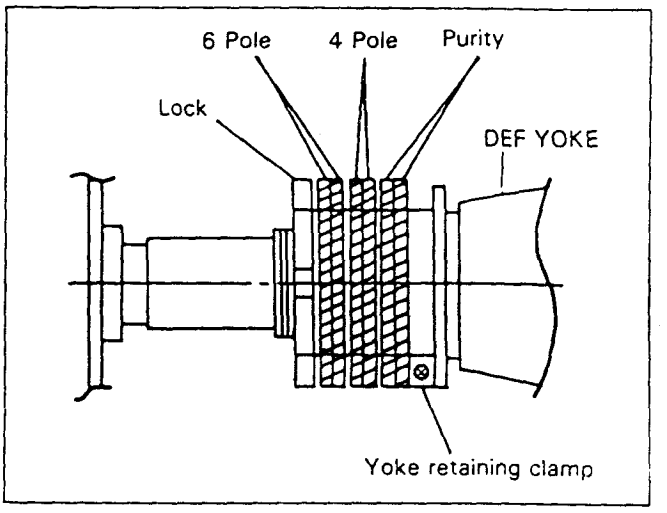


Fig. 6-1

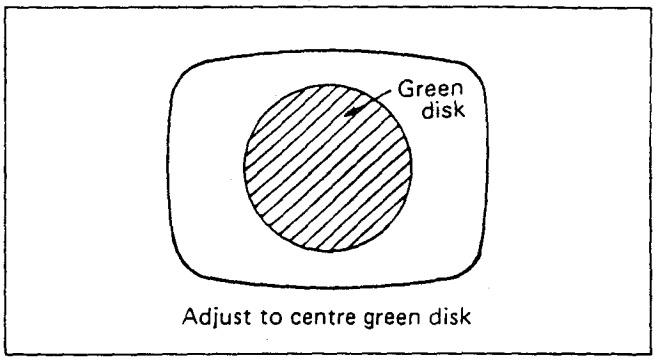


Fig. 6-2

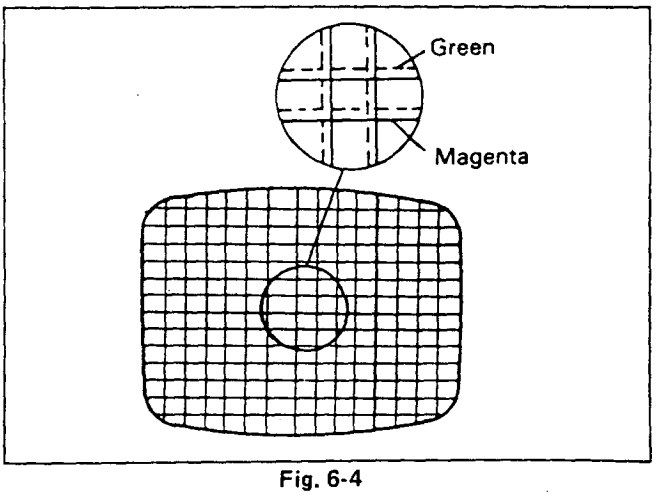


Fig. 6-4

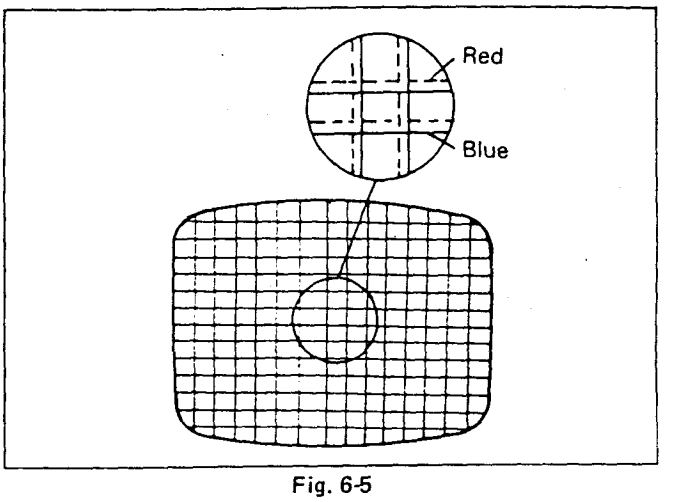
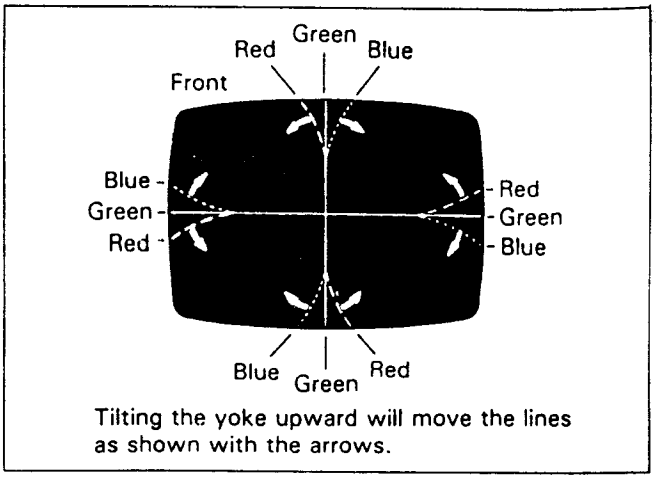


Fig. 6-5

DYNAMIC CONVERGENCE (CORNER)

1. Remove the wedge.
2. Adjust convergence as shown in Fig. 6-6 by tilting the yoke up and down, then insert the wedges on top and bottom. (Fig. 6-7)
3. Apply (modeler's) glue on the wedges and magnets to fix.(Fig. 6-7)
4. Tighten the screw of the deflection yoke.
5. Turn the magnet lock and tighten securely.



Tilting the yoke upward will move the lines as shown with the arrows.

Fig. 6-6

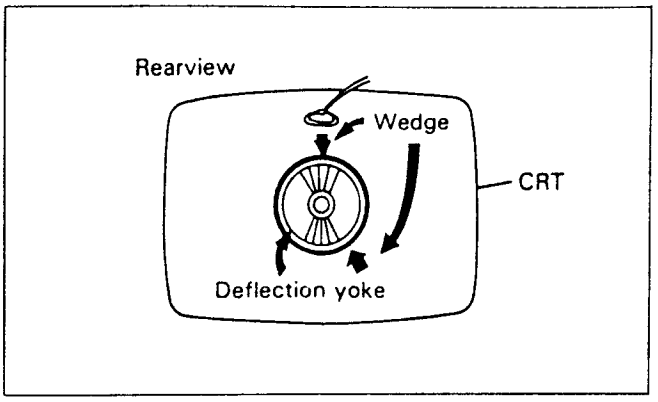


Fig. 6-7

POWER SUPPLY

■ AC ADAPTER OUTPUT VOLTAGE

1. Connect AC power adapter to a TV body and receive a broadcast.
2. Adjust OUTPUT VOLTAGE ADJ. VR (within power adapter PB Ass'y) so that the adapter output voltage becomes 12.5V.
   * Be aware that there are both the earth of primary side and the earth of secondary side. In case of output voltage adjustment, use the earth of secondary side.

■ B1 VOLTAGE (11.0V)

1. Connect AC power adapter and receive a broadcast.
2. Adjust 11.0V ADJ. VR so that the voltage between Q901 collector and the earth becomes 11.0V.

SUB TUNING DIAL

*** Turn off the AFC switch.**

1. VL CHANNEL

1) While rotating the TV tuning knob, set the dial needle to that channel number of the low band TV station which is smallest among those receivable.
2) Adjust the VL SUB TUNING VR and receive a TV program from the station whose channel number is set on the dial needle.
3) By attempting to receive other stations within the band, confirm that the pointer corresponds to the channel number of each station.

2. VH CHANNEL

1) While rotating the TV tuning knob, set the dial needle to that channel number of the high band TV station which is smallest among those receivable. Adjust the VHL SUB TUNING VR and receive a TV program from the station whose channel number is set on the dial needle.
2) While rotating the TV tuning knob, set the dial needle to that channel number of the high band TV station which is largest among those receivable. Adjust the VHH SUB TUNING VR and receive a TV program from the station whose channel number is set on the dial needle.
3) Repeat steps (1) and (2) and confirm that the pointer corresponds to the channel number of each station.

3. UHF CHANNEL

1) After changing over the TV band selector to UHF position, adjust the UHF SUB TUNING VR in the same manner as "VH ADJUSTMENT". However, adjust the UL SUB TUNING VR in the case of the smallest channel number of TV station and the UH SUB TUNING VR in the case of the largest channel number of TV station.

4. Turn on the AFC switch.

HORIZONTAL OSCILLATOR

1. Set the H. HOLD VR to the mechanical center position.
2. Connect the jumper clip between TP-33 and earth.
3. Adjust the H. HOLD VR until picture is in view and locks or drifts slowly back and forth.
4. Remove the jumper clip.
5. Make sure that the set maintains horizontal sync when channels are switched.

FOCUS

Adjust FOCUS VR for best overall definition and picture detail at normal brightness and contrast.

NOISE (RF A.G.C. Delay)

This control is set at the factory and rarely requires any adjustment. If a snowy picture appears on a medium to weak station, adjust the NOISE VR.

1. Turn NOISE VR fully counter-clockwise, maximum noise in picture.
2. Slowly turn NOISE VR clockwise until snow or noise in picture just disappears.

   Note: Check operation on strong channels. If overloading occurs (bending, poor colour, loss of colour sync. etc.) make compromise adjustment.

VERTICAL HEIGHT

Adjust the V. HEIGHT VR to obtain the optimum size of vertical height.

SUB BRIGHT AND SUB CONTRAST

1. Set the BRIGHT and PICTURE VR knobs to central position respectively.
2. Adjust the SUB BRIGHT VR and the SUB CONTRAST VR until an ideal picture is obtained.

SUB COLOUR

1. Receive a SECAM colour signal.
2. Adjust the COLOUR VR knob to obtain natural colour density.
3. Adjust the SUB COLOUR VR until natural colour density is obtained.
4. Receive a PAL colour signal.
5. Adjust the PAL SUB COLOUR VR until natural colour density is obtained.

CHROMA CIRCUIT

■ PAL

DL-MATRIX

1. Receive a PAL colour bar signal.
2. Connect an oscilloscope to (10) pin of IC201 through C307.
3. Adjust T302P for the maximize waveform (Burst signal).
4. Set the oscilloscope at the X-Y mode and connect channel 1 (X axis) to (17) pin of IC301 and channel 2 (Y axis) to (15) pin of IC301 respectively.
5. Short TP-43A and TP-43B with a jump wire.
6. Supply bias to TP-40 through 10 kΩ resistor from 12V DC.
7. Adjust DL AMP. VR so that the figure becomes (B) from (A).
8. Adjust DL P. TRANSF (T303) so that the figure becomes (C) from (B).
9. While observing the screen, adjust colour synchronization by manipulating the C312 (4.43 MHz OSC).

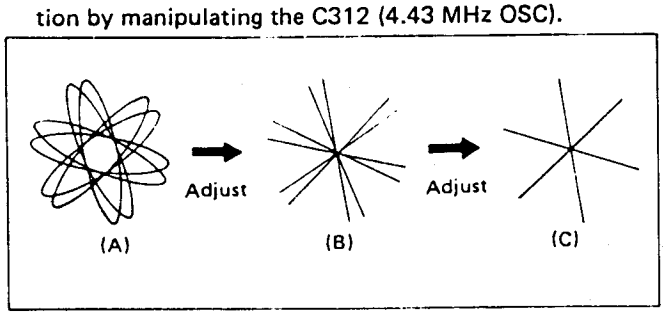


Fig. 6-8

■ SECAM

* Do the SECAM adjustment before the PAL adjustment.

1. Receive a SECAM colour bar signal.
2. Connect an oscilloscope to (27) pin of IC301.
3. Adjust BELL TRANSF. (T301S) for the flat waveform as shown in Fig. 6-9-(B).
4. Connect a digital voltmeter to pin (26) of IC301.
5. Adjust IDENT TRANSF (T302S) for the maximum DC ovltage.
6. Adjust DISCRI. TRANSF. (T304) and DISCRI. TRANSF. (T305) until colours are eliminated from the black-and-white sections of the colour bars.

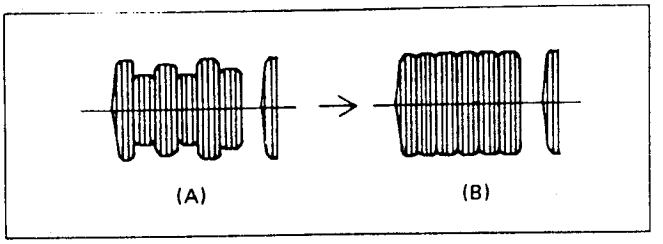


Fig. 6-9

HORIZONTAL WIDTH

Adjust H. WIDTH control coil by turning it with a hexagonal adjusting bar only if RIGHT and LEFT sides of pictures can't be seen.

V. IF CIRCUIT

1. Connect a color bar generator to antenna terminal. (When the signal is too strong, use the attenuator.)
2. Connect DC voltmeter (or tester) between AGC terminal of E. Tuner and earth.
3. Rotate "Noise" volume (R109) so that RF. AGC voltage becomes DC 4.5V ± 1V.
4. Adjust CW Transformer so that the indicator becomes to minimum.
5. Confirm the adjustment of "Noise".

RF. AFC

1. Connect a colour bar generator to antenna terminal.
2. Adjust AFC Transformer so that the voltage of TP-16 becomes DC 6.5V ± 0.1V. (Confirm to swing between about 9V and 4V previously.)

S. IF CIRCUIT

1. Tune in a local station preferably a program with the continuous audio.
2. Adjust T601 and T602 so that the sound becomes to maximum without distortion.

■ REFERENCE DATA

REFERENCE DATA

Receiving VHF TV channels (All UHF TV CHs; common) / * Mark; Receiving CHs limited

CCIR countries	2 3 4		5 6 7 8 9 10 11 12
OIRT countries	1 2	3 4 5	6 7 8 9 10 11 12
Itary	A B	C	D E F G H H1 H2
French territories			4 5 6 7 8 9
* Australia	1 2	3 4	6 7 8 9 10 11
* New Zealand	2 3		4 5 6 7 8 9
* Ireland	B C		D E F G H J
* Morocco			6 7 8 9 10

8. AC POWER ADAPTOR (AA-60ME)

SPECIFICATIONS

Output Voltage : DC12.5V
Output Current : 1.4A

■ HOW TO REMOVE FOR SERVICE
REMOVING THE ADAPTOR COVER

Unscrew the four screws Ⓐ in Fig. 8-1 and remove the adaptor cover.

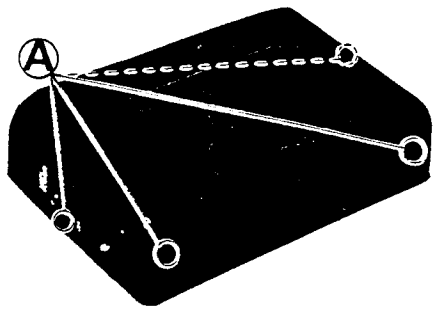


Fig. 8-1

■ REPLACEMENT PARTS LIST
TRC-9280A (POWER PB ASS'Y)

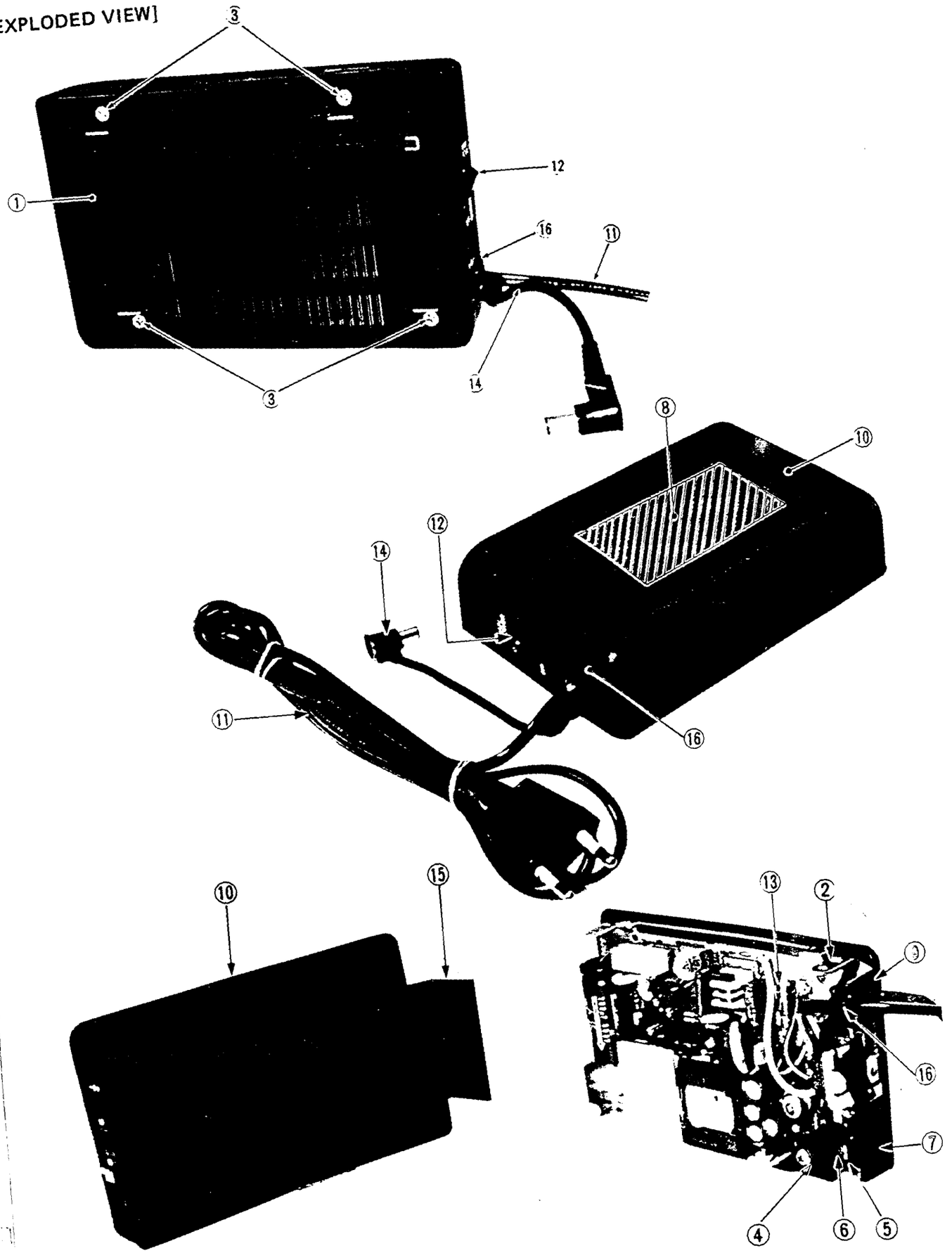
SYMBOL NO.	△	PART NO.	PART NAME	REMARK
VARIABLE RESISTOR				
R9021		CEX40358-222	VR (Output Voltage Adj.)	2.2kΩ B
RESISTOR				
R9002		QRF056K-1R8C	UNF R	1.8Ω 5W K
9008		QRG019J-223S	OM R	22kΩ 1W J
9010		QRX019J-1R0S	MF R	1Ω " "
9020		QRD141J-392SY	C R	3.9Ω ¼W "
9022		" -103SY	"	10kΩ " "
9023		QRX019J-6R8S	MF R	6.8Ω 1W "
9026		QRG019J-821S	OM R	820Ω " "
9030		QRG019J-223S	"	22kΩ " "
9032		QRG019J-471S	"	470Ω " "
9036,7		QRG019J-223S	"	22kΩ " "
9038	△	QRZ0057-685	C R	6.8MΩ " "
CAPACITOR				
C9001	△	QFZ9017-104M	MM Cap.	0.1μF AC250V M
9003, 4	△	QCZ9011-222M	C Cap.	2200pF AC400V "
9007	△	QFZ9017-104M	MM Cap.	0.1μF AC250V "
9009,10	△	QCZ9011-222M	C Cap.	2200pF AC400V "
9011		QEZ0085-107M	E Cap.	100μF
9014		QEE51VK-474B	Tan. Cap.	0.47μF 35V K
9015		QFH52BK-103M	MM Cap.	0.01μF 125V K
9016,18		QCS13DM-331U	C Cap.	330pF 2kV M
9021		QEE51VK-474B	Tan. Cap.	0.47μF 35V K
9022		QEM51CK-476M	E Cap.	47μF 16V "
9028		QFZ0083-104M	M Cap.	0.1μF 50V K
9029	△	QCZ9011-472M	C Cap.	4700pF AC400V M
9031		QEN51HM-335	BP E Cap.	3.3μF 50V "
9036,7	△	QCZ9011-222M	C Cap.	2200pF AC400V M
9038,9		QCZ9011-222M	"	" " "
9041		QEN41HM-335	BP E Cap.	3.3μF 50V "
9042	△	QCZ9011-472M	C Cap.	4700pF AC400V

SYMBOL NO.	△	PART NO.	PART NAME	REMARK
TRANSFORMER				
T9001	△	CE40710-00A	Line Filter	
9002	△	A76567-MA	P. Drive Transf.	
9003	△	CE40638-00A	Switching Transf.	
DIODE				
D9001		W006	Si. Diode Bridge	
9002		V19G	Si. Diode	
9003		RD7.5E(B2)	Zener Diode	
9004,5		V09E	Si. Diode	
9006		ESAB82-004	"	
9007		GL-3PR2	LED	MAIN POWER IND.
TRANSISTOR				
Q9001		2SC2688(K,L)	Si. Transistor	
9002		2SC1685	"	
9003		2SD1453	"	
9004		2SC1627A	"	
9005		2SC2688(K,L)	"	
COIL				
L9001		CE30001-420	Heater Choke	
IC				
IC9001		AN5900	IC	
OTHER				
K9001~3		CE40155-001	Core	
F9001	△	QMF51E2-2R5S	Fuse	2.5A
R9003	△	CE40643-001	Posistor	
		CEX40061-001	Plug & Lead Ass'y	

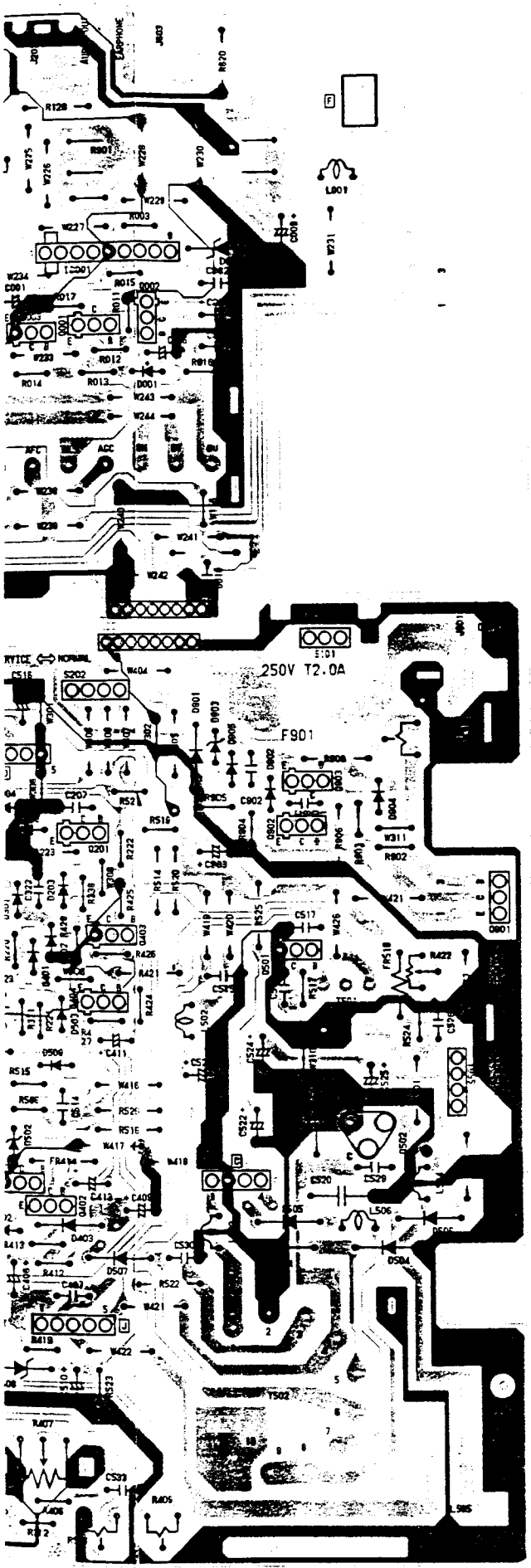
CHASSIS AND CABINET PARTS LIST

VIEW NO.	SYMBOL NO.	△	PART NO.	PART NAME	REMARK
1			CM20431-002	Adaptor Base	
2			CM20433-A01	Adaptor Case	
3			SSSP3005Z	Screw	(x4)
4			CM40258-A01	Spring Holder	
5			CM42581-001	Lock Bracket	
6			CM30861-015	Spring	
7			CM42079-002	Lock Knob	
8			CM42136-003	Serial Plate	
9			CM42142-001	Blind Sheet	
10			CM20432-A03	Adaptor Cover	
11		△	QMP4018-200R	Power Cord	
12	S9001	△	CEX40376-001	See Saw Switch	Main Power
13	F9001	△	QMF51E2-2R5S	Fuse	2.5A
14			CEX40061-001	Plug & Lead Ass'y	
15			CM31274-001	Insulator	
16			QHS3876-162	Cord Clamp	

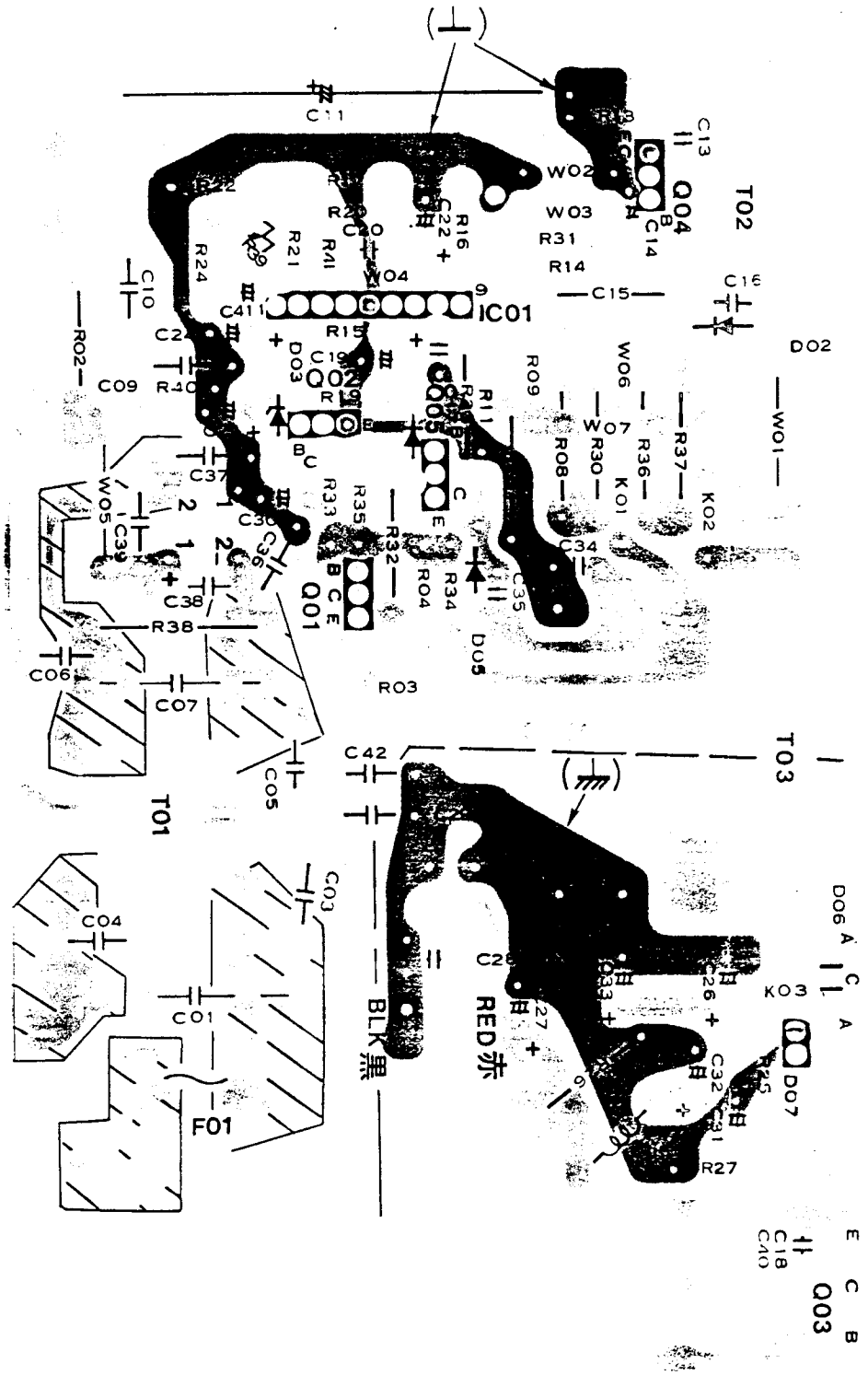
[EXPLODED VIEW]

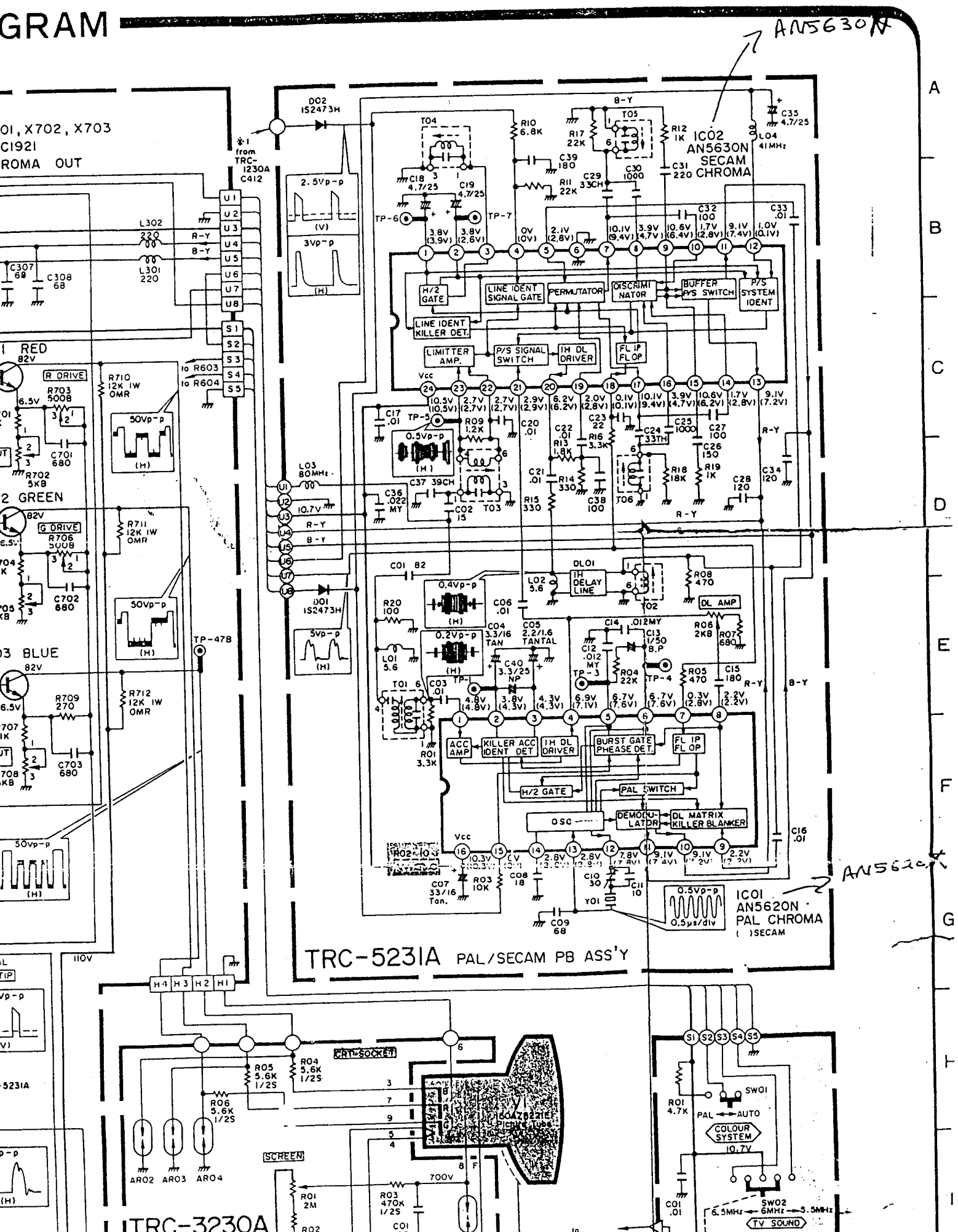


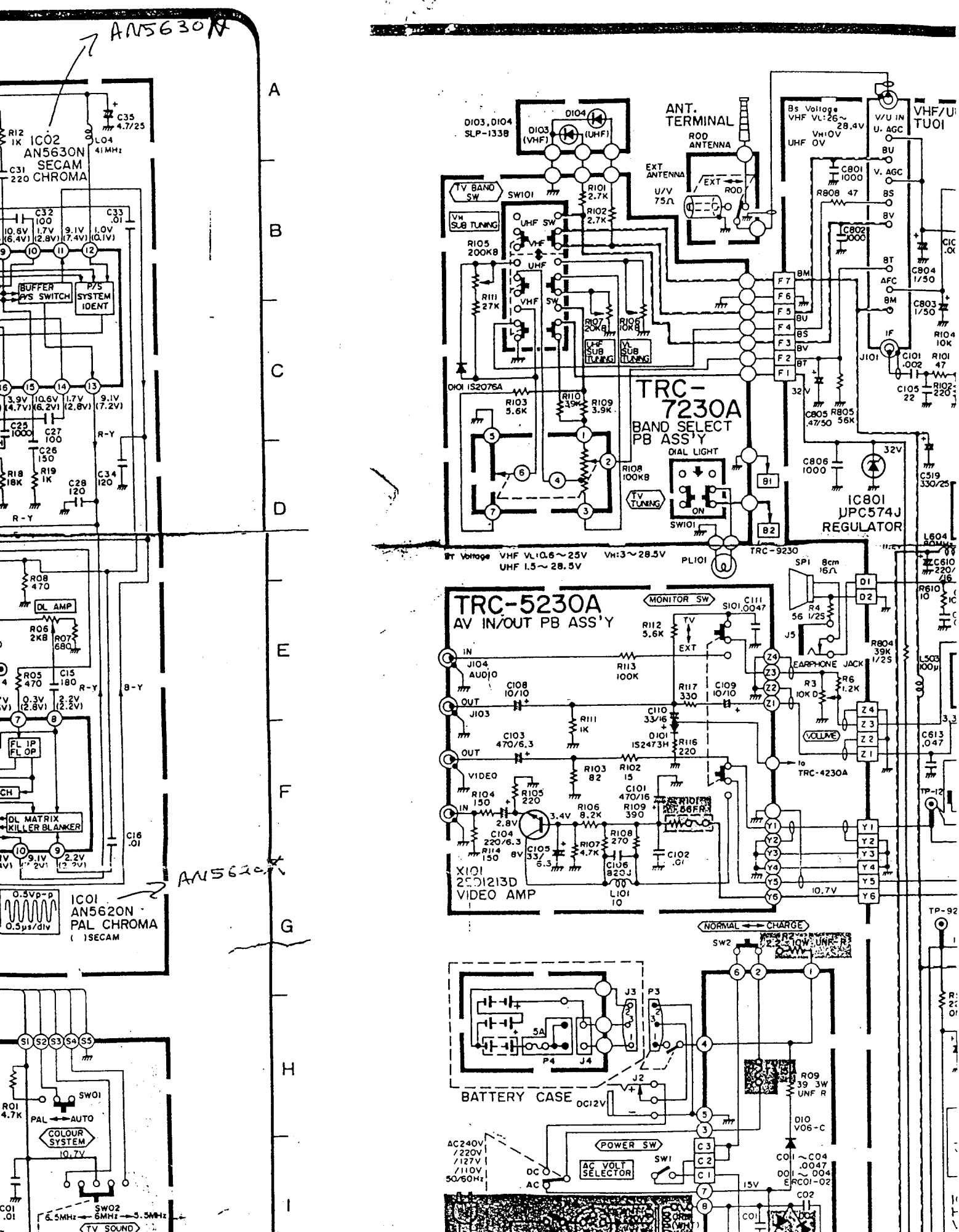
POWER PB BACK PATTERN (AA-60GB)



POWER PB BACK PATTERN (AA-60GB)




GRAM
AN5630N
IC02 AN5630N SECAM CHROMA
IC01 AN5620N PAL CHROMA ( )SECAM
TRC-5231A PAL/SECAM PB ASS'Y
TRC-3230A
CRT SOCKET
SCREEN
PAL SWITCH
COLOUR SYSTEM
TV SOUND
PAL AUTO
R DRIVE
G DRIVE
B DRIVE
ACC AMP
KILLER ACC IDENT DET
1H DL DRIVER
BURST GATE PHEASE DET.
FL IP FL OP
H/2 GATE
LINE IDENT SIGNAL GATE
PERMUTATOR
DISCRIMI NATOR
BUFFER P/S SWITCH
P/S SYSTEM IDENT
LINE IDENT KILLER DET.
LIMITTER AMP.
P/S SIGNAL SWITCH
1H DL DRIVER
FL IP FLOP
1H DELAY LINE
DL AMP
OSC
DEMODU-LATOR
DL MATRIX KILLER BLANKER
110V
700V
10.7V
0.5μs/div


AN5630N
IC02
AN5630N
SECAM
CHROMA
C31
220
C35
4.7/25
L04
4.1MHz
C32
100
C33
.01
BUFFER
P/S SWITCH
P/S
SYSTEM
IDENT
C25
1000
C27
100
C26
150
C34
120
C28
120
R-Y
R18
18K
R19
1K
R08
470
DL AMP
R06
2K8
R07
680
R05
470
C15
180
B-Y
FL IP
FL OP
DL MATRIX
KILLER BLANKER
C16
.01
AN5620N
IC01
AN5620N
PAL CHROMA
( )SECAM
0.5Vp-p
0.5μs/div
SW01
PAL ↔ AUTO
COLOUR
SYSTEM
10.7V
SW02
6.5MHz ↔ 6MHz ↔ 5.5MHz
TV SOUND
A
B
C
D
E
F
G
H
I
ANT.
TERMINAL
R00
ANTENNA
EXT
ANTENNA
U/V
75Ω
D103, D104
SLP-1338
D103
(VHF)
D104
(UHF)
TV BAND
SW
SW101
VH
SUB TUNING
UHF SW
VHF SW
R101
2.7K
R102
2.7K
R105
200K8
R111
27K
R107
20K8
R106
10K8
UHF
SUB
TUNING
VL
SUB
TUNING
D101 1S2076A
R103
5.6K
R110
3.9K
R109
3.9K
R108
100K8
TV
TUNING
DIAL LIGHT
ON
SW101
TRC-
7230A
BAND SELECT
PB ASS'Y
TRC-9230
PL101
B1
B2
F7
F6
F5
F4
F3
F2
F1
BM
BU
BS
BV
BT
AFC
8T Voltage VHF VL:0.6~2.5V VH:3~28.5V
UHF 1.5~28.5V
Bs Voltage
VHF VL:2.6~28.4V
VH:10V
UHF 0V
V/U IN
U. AGC
V. AGC
IF
J101
C801
1000
R808 47
C802
1000
C804
1/50
C803
1/50
R104
10K
C101
.002
R101
47
C105
22
R102
220
C805
.47/50
R805
56K
32V
C806
1000
IC801
μPC574J
REGULATOR
C519
330/25
L604
C610
220/
R610
10
TRC-5230A
AV IN/OUT PB ASS'Y
MONITOR SW
SI01
C111
.0047
R112
5.6K
TV
EXT
IN
J104
AUDIO
R113
100K
OUT
J103
C108
10/10
R111
1K
C103
470/6.3
OUT
VIDEO
R103
82
R102
15
R104
150
R105
220
IN
2.8V
3.4V
C104
220/6.3
8V
R114
150
C105
33/
6.3
R106
8.2K
R107
4.7K
C106
820J
C102
.01
R108
270
C101
470/16
R109
390
R101
0.68Ω
R116
220
C110
33/16
D101
1S2473H
C109
10/10
R117
330
X101
2SD1213D
VIDEO AMP
L101
10
10.7V
to
TRC-4230A
J5
EARPHONE JACK
R3
10K D
R6
1.2K
VOLUME
R804
39K
1/2S
L503
100μ
C613
.047
R4
56 1/2S
SP1 8cm
16Ω
D1
D2
Z4
Z3
Z2
Z1
Y1
Y2
Y3
Y4
Y5
Y6
NORMAL ↔ CHARGE
SW2
R2
2.2Ω 10W UNF R
J3
P3
5A
P4
J4
J2
BATTERY CASE
DC12V
R09
39 3W
UNF R
D10
V06-C
POWER SW
AC VOLT
SELECTOR
SW1
AC240V
/220V
/127V
/110V
50/60Hz
DC
AC
C3
C2
C1
15V
C01 ~ C04
.0047
D01 ~ D04
ERC01-02
C02
C01
R1
4.7K
C01
.01